

AMERICAN JOURNAL OF INSANITY

PRESIDENTIAL ADDRESS.¹

A. E. MACDONALD, M. D.

Gentlemen of the Association, ladies and gentlemen:—The first thought that comes to me in assuming the duties of the honorable office to which, in your kindness, you have elected me, is of the untoward event that has opened that honor to me at least a twelve-month earlier than in the ordinary practice of the Association I could properly have aspired to it.

At your meeting in Washington, a year ago, you unanimously elected to the highest office in your gift, the then Vice-President, Dr. A. B. Richardson, Superintendent of the Government Hospital for the Insane in that city, who, as Chairman of the local committee of arrangements for that meeting had given conspicuous evidence of his ability as an organizer, and, during the most enjoyable visit to his hospital which brought the session to its close, had given conspicuous evidence also of his charm and geniality as a host.

A few short weeks afterward, and while the pleasurable memories of our meeting with him were fresh in our minds, we were shocked by the tidings of his sudden death, at the height of his efficiency and usefulness.

At the appropriate time in the course of your sessions at the present meeting, Dr. Richardson's life and works, and the suddenness and sadness of his demise, will be properly presented to you by Dr. Tobey, and it is not for me to anticipate that presentation. But, as called upon, through your great loss, to less worthily, I fear, fill his place, I crave leave to bear my personal tribute to the worthiness of my predecessor.

¹ Delivered at the Sixtieth Annual Meeting of the American Medico-Psychological Association, at St. Louis, Mo., Monday, May 30, 1904.

Last year you listened to a Presidential address that was erudite and scholarly to a degree. And why should it have been otherwise, for was not your then President also one of the four Editors of the American Journal of Insanity? I have been told by gentlemen of authority, in that they are also erudite and scholarly, though whether they constitute the other three members of the editorial corps, or no I will not divulge, that in that essay no author, living or dead, worthy of quotation, went unquoted—save one. I remedy the omission by quoting the following words:—"For a whole year such a thing as serenity of soul is unknown to the man who awakes to find greatness accidentally thrust upon him as President-elect of an Association like this. From the moment of initial apprehension to this one of extreme anxiety, the thought of delivering the annual address haunts him during every waking hour and even racks his subconscious mind while he seems to sleep o'nights." The quotation is from the Presidential address just referred to; and its author was Dr. G. Alder Blumer.

If such words could be spoken by a gentleman of the facile pen of Dr. Blumer what could be said, even under ordinary circumstances, by one whose pen is so unfacile that some of the members of the Association have been known to claim that they could not even decipher his signature? To further, not ordinary, circumstances of disability in my own case your temporary presiding officer has kindly alluded in introducing me. Had I followed my own judgment and others' advice I should have, much against my inclination, absented myself from your meeting, and defaulted in the matter of the address. But unfortunately for myself and perhaps for you, the Association is possessed of a Constitution and a Secretary.

The Constitution provides, among other things, that the President shall not only prepare an address but shall present it upon the opening day of the Annual Meeting; and the Secretary proposes to see to it that the provisions of the Constitution are carried out to the letter. Under his insistent and imperative demands that I should present myself, dead or alive, I have found it absolutely impossible to escape. Apart from the requirements of the Constitution to which I have already referred, he warned me that failing my attendance the Council would fail of a quorum,

and that other failures of dire and various import would follow in succession. After my arrival I found that precisely similar warnings and threats had been sent by him to the other members of the Council, each of whom was given to understand that all depended upon *him*, with the result that the Council had not only a quorum but a surplus.

And so I must ask you to accept in lieu of the customary carefully prepared address a few desultory notes; to regard them somewhat in the same light as the despatches such as we read every day now, under the standard head-lines "Delayed in Transmission," and, as is so often done in another deliberative body, "grant leave to print," at some future time, and after possible elaboration.

I congratulate the Association upon an attendance at this meeting which is larger than could well have been expected, in view of the date, owing to necessary deference to probable weather conditions, having been set earlier than that of customary vacations, and at a time, therefore, when duties and engagements held many members to their posts. In addition there are two particulars upon which I may especially congratulate the Association at this juncture—its reaching the sixtieth anniversary of its formation, and its reaching also that talismanic stage in the number of its membership—the four hundred. At the date of the last, or fifty-ninth, annual meeting, the membership, including all classes, stood at three hundred and seventy-four. With favorable action upon your part, if that is taken, as to the applications of candidates upon which the Council has already acted favorably and will recommend to you, the four hundred mark will be passed and a total of four hundred and twelve possibly reached.

The Association had its origin in the year 1844 when, at a meeting held in Philadelphia, on October 16, thirteen superintendents attended and formed themselves into "The Association of Medical Superintendents of American Institutions for the Insane," that title being abandoned, and the present one adopted, in the year 1892. With our assembling to-day, therefore, the Association celebrates the sixtieth anniversary of its birth, and reaches that age which is commonly accepted as that of wisdom, at least in counsel. In the year 1874, marking the completion of the thirtieth year of its existence the Association, through a committee, com-

piled and published a summary of its history and transactions, giving, in brief, details of its annual meetings, the attendants thereupon, the principal topics discussed and action taken, and references to special events of the successive years. The completion with this meeting of a second period of thirty years would seem to make this an appropriate time for the production of a second volume, and I beg to recommend to you the taking of the necessary steps toward its compilation and publication.

The office of President of this Association, with its high standing and large and distinguished membership, is one of which any incumbent cannot but feel proud, and, naturally, election to it is apt to come, as a general thing, somewhat late in life, at least in *official* life, and the words in which he first speaks to his associates are prone to be mingled ones of salutation and valediction. There is always likely to ring through them the minor key of the *Morituri te Salutamus*.

For myself, having just arranged for my withdrawal from official life after thirty-five years of hospital service, and having endeavored to prepare myself for the formal address which I had expected to deliver by the perusal of the published transactions of this Association for the sixty years of its existence, I have at the moment almost a paternal, not to say a patriarchal feeling. And this is not lessened as I survey the faces of my audience, and see among them those of several of the many who have reached high rank in our special field after faithful service as my assistants and associates, whom I am accustomed to think and speak of as "my boys," and of whom, I may confess, in confidence, I am, for the most part, not a little proud. The reading and the associations suggested an address upon the lines that "there is nothing new under the sun," and that I should appropriate for the benefit of, at least my younger, auditors, the warning refrain of Thackeray's genial rhyme "Wait till you come to forty year."

It is far from my intention to decry or belittle the progress that has been made in affairs with which we have most to do, or to write myself down as what I suppose would be called in the vernacular of the period, a Medico-Psychological stand-patter.

While I believe that affairs move largely in a circle and that in their revolutions the same point of the compass is reached from time to time, I believe also that there is a steadily ascendant

movement and a consequent improved position. And I equally believe that in such improvement, in such advance, as steady and marked progress has been, and is being, made upon our own Continent as elsewhere. I have no sympathy with the cry that is so constantly ringing in our ears: "they do this and that so much better in Europe." I believe that we can and should gain and borrow much from our confrères in other climes, but I believe also that we can and do make fair and full repayment of the loan. It is but fair to say that the material to which we are so often commended, and which if it came, like other material, under the restrictions of the tariff-regulations, would bear upon its back the hall-mark "made in Germany," or "France," or where not, is exploited not by its producers, who are becomingly modest as to its merits, but by advocates in our own country who very often know practically little or nothing about it. I do not doubt that many of you have duplicated my own experience in visiting foreign hospitals, in hearing from their superintendents deprecatory reference to the lavish praise which their establishments have gained from some of our countrymen, especially those who have never visited them. The Directors of Alt Scherbitz or Gheel, no less than their colleagues of Paris or Berlin or Vienna are the first to speak of differences in location and surroundings and customs which make possible with them methods which would be quite impracticable with us. And to attempt imitation, as we are often urged to do by sincere and well-meaning, but ill-informed, philanthropists, of some less admirably administered foreign institutions or colonies, would be to invite the organization of an informal lynching party with ourselves as the principal performers. Doubtless, we have profited much from the researches and experiments of our European colleagues, and in view of the revelations of progress in other, less worthy directions with which an Asiatic nation is just now astounding the world, we need not be surprised if that little people should later give us valuable hints as to the care and treatment of the insane. For myself, I may say incidentally that when we do borrow from peoples other than our own we may, I believe, do so to as good advantage as from any other from that people who will speak to us, by tongue or pen, in language common to us both.

I had purposed calling your attention at length, and will now do

so briefly, to certain matters which, it appears to me, may properly and profitably engage the attention of the Association, possibly in conjunction with other similar organizations. One of these is the perennial question of the classification of insanity, which, often as it has been agitated and pondered, has yet failed of satisfactory adjustment. It is matter of great regret that some, at least working, agreement cannot be reached, faulty even though it should be, which will enable the alienist of one country to understand the statistics of others, and to apply them, by way of comparison, to his own. If such a standard is to be reached it would appear to me that it must be through mutual concessions and agreements of practical men such as compose our own and kindred Associations, for I opine that present conditions result from less possibly coherent elements: authors and clinicians, for example, who have the pride of their own classifications, unstable though they be, and are incapable of recognizing possible value in others. An author for the most part establishes his own individual classification, which, as a rule, proves diffuse and cumbersome, and which, altered and added to with successive editions, tends toward an ultimate approximation in the number of forms and sub-forms to the total number of individual patients coming under his observation. Such a system is, of course, valueless for the practical purposes of record-keeping in a public hospital or an aggregation of public hospitals, hence my suggestion that to those most intimately connected with the latter as represented in this and kindred organizations, we may most hopefully look for relief from present embarrassment. It is but fair, however, to confess, that the history of my own State in the matter is not encouraging. The power of the State Commission to prescribe all forms for classification and other tabulations, as well for private as public hospitals, might properly be counted upon to make for simplicity or at least for stability, and as matter of fact for several years a simple and concise classification was maintained which, without being by any means an ideal one, served fairly well the necessities of uniformity and clearness. Shortly, however, before its continuous use had covered the even period of ten years—which with the large number of patients involved would have furnished for all time a valuable basis for reference and comparison—it was superseded by another system

of questionable superiority at the best, but, in any case, of sufficient divergence to lessen the value of statistics gathered under either. And now, again, after a lapse of but little more than two years, we are threatened with still another revolution, and that in the direction of an intricate association of newly discovered or invented forms which promises little in the way of adhesiveness or permanency.

Another and cognate subject which might well share with that just referred to interstate, or even international, attention and agreement is that of statistical information in general, the subjects properly embraced within its scope and the forms and limitations desirable. Our sister body—the Medico-Psychological Association of Great Britain and Ireland—approached this subject at its annual meeting in 1902, and a committee then provided for has from time to time since made tentative reports which are most interesting not only in themselves but in the comments and criticisms which they have provoked. The statistical tables then in use in Great Britain, twelve in number, had been adopted by that association from time to time, some of them remaining unaltered for as long a period as forty years, but it was felt that, owing to lack of definition, and consequent diversity in interpretation, there was need of revision in the direction of greater correlation between the tables. In our own territory, there are to be found the same reasons for revision of existing tables, with the added reason that no generally accepted forms exist, each State or Province, or indeed each institution, being in that respect a law unto itself. It would be a decided gain if this Association, following the course of its transatlantic exemplar should revise and codify existing varying systems, and present a homogeneous system suitable for all hospitals represented in it; and it would be still more desirable if through co-operation with our English brethren a common system might be framed and agreed upon. I am not an advocate of radical and frequent changes; on the contrary my hope from a new formula would be such stability as would prevent for a long time to come the recurrent recasting and tinkering which make existing systems well nigh useless.

Foremost among the standard tables which, in my experience and judgment, are in especial need of reform is that which takes account of the discharges of patients and of their mental condition.

at that time. These tables are the constant target of question and attack, and from their mingling of different classes of patients, and the influence of transfers, etc., with other points of divergence, are capable of use, and have been used, in the exploitation of most unfair comparisons.

In the addenda to the published volume of the Transactions of your Association for last year there occurs—and it speaks well for the energy and accuracy of its Editor, your Secretary—but one note under the heading "Erratum:" which reads—Page 175, line 12; for "tabulations" read "fabrications."

I do not accuse or suspect our Secretary of any such undue levity as tampering with either the mistake or the correction, but it occurs to me that this warning is capable of much wider application than this single instance—"For tabulation read fabrication" might well be suggested of many assemblages of figures, and especially of those by which percentages of recoveries are sought to be established. So notorious have the fallacies of such tabulations become, that all reference to recoveries as such has been omitted from several official sets of tables both here and abroad, the most notable recent action in that direction, and in my judgment a very wise one, being in the compilation of statistics for the United States official census now in progress.

In my own State again, if you will pardon the reference, which I make only because its practices are naturally most familiar to me, figures purporting to show the facts as to the number of recoveries in public hospitals in proportion whether to admissions, discharges or the whole, or average, number under treatment, have long been, and are becoming still more, palpably unreliable. If the figures of some hospitals could be accepted as absolute, an acme of successful treatment must have been reached beyond the dreams of the most optimistic. But unfortunately when read in the light of other information, where, for example, the readmissions are compared with the cures, the flattering results set forth in the latter total become much less flattering. The question of recovery from insanity is at best a most difficult one, and when upon the answer thereto depend comparisons between different institutions, or localities, or periods, that answer should be accepted with caution or even suspicion. Hospitals differ as to their clientele, and preponderance of acute or chronic cases, curable or incurable

forms of the disease, or even of one or other sex over the opposite, will influence materially the results of hospital treatment. Superintendents differ in temperament as well as in knowledge and experience, and the sanguine will see recovery when his opposite will detect only improvement, for the personal equation enters into this as into other problems of humanity. After all, it may be said that in a general way the determination of the restoration of sanity in a person who has once been admittedly insane rests upon the detection or non-detection, upon the part of the examiner, of delusions or other evidences of the continuance of the disease. This being granted, the more skilled examiner will claim the fewer recoveries, and will always be at a disadvantage as against his less-skilled colleague and competitor.

In the State of New York, to my thinking, a source of additional error and misconception is found in the permission and practice of paroling patients, and the subsequent discharge of many of them without their return to the hospital or submission to an examination whereby their then mental condition may be determined. In some hospitals indeed, as I am given to understand, the majority or perhaps all of those patients whom it is desired to discharge are first released under parole for a definite period, and the mere fact of their failure to return within that period is taken not only as ground for discharge, but discharge "recovered." Very often it turns out that the return has been delayed for but a few hours or days, through unfavorable weather, the missing of a train, resistance upon the part of the patient, or some other comparatively unimportant happening. Occasionally there is a graver reason, the patient's enjoyment of his parole has been curtailed by his consignment to another hospital or to prison, and in more than one instance within my knowledge, his return at the allotted time has been interfered with by his death. In one notable case, indeed, the patient took his own life a few days before the expiration of his parole, but as neither he, nor information of his demise, reached the hospital on that day he was duly discharged "recovered." With this untoward event and this one entry this particular patient no doubt ceased his usefulness as a contributor to the recovery list, but those who did return, though tardily, became again eligible for re-parole and re-recovery, and how often they have contributed to these padded tabula-fabrications deponent sayeth not.

Two other enterprises which might, I think, appropriately enlist the services of this Association have reference respectively to the patients' entrance upon and exit from hospital residence. The methods of commitment of the insane vary greatly in different States, and the adoption of some one method, especially if it should result in the securing of not only uniformity but simplicity, is a most desirable desideratum. Hospital treatment for insanity should be as readily obtainable as for any other disease, and the elaboration of legal forms and processes is a dire injustice to the sufferer. Yet in some, if not in most, of our commonwealths the tendency has been steadily in the direction of such elaboration, and I doubt if, in a single instance, the prescribed methods of the present day differ in the direction of simplification from those of, say twenty, years ago.

In some States the *ultima thule* of injustice and absurdity has been reached, and trial by jury—an ancient and honorable humbug at the best—has, with its attendant publicity and scandal been forced upon the unfortunate patient, and upon his no less unfortunate family. In the State of New York this depth has not been sounded, but it is constantly threatened by the self-constituted and so-called "Protectors," who pose as bulwarks against ills which they cannot specify or define. But short of that, in the course of years, we have come to a method of commitment, exemplified by an instrument, so involved and unassimilated that few of the thousands of physicians legally qualified, attempt to execute it; that many labor under the mistaken belief that they must, instead of acting themselves, call in some specially qualified examiner; and that, from time to time, it has been found needful by the authorities to arrange for special examination of the papers under which patients are being held in order that defects might be made good even to the extent of re-examination and re-commitment. I have not known in the course of my long practical experience a single instance of wilful or malicious certification of insanity where such did not exist; and I have no reason to believe for a moment that any sane man or woman is held as insane in any hospital or asylum of our State. But I do believe, that, owing to their abstruseness and indefiniteness, and to conflicting constructions and interpretations of their requirements, scores, or even hundreds, of the commitment papers under which the

twenty-six thousand patients of the State are being held, might be invalidated upon technical legal objections.

Intervention in the interest of our patients at the other extreme of their hospital residence might appropriately find a field in such provision as would make less precipitate and disturbing the return of the convalescent patient to the world and the resumption of customary pursuits and avocations. Every superintendent must often find the need of something to help in tiding over the transition period between insanity and the hospital, and restoration and the strenuous life. Convalescent homes, employment agencies, pecuniary assistance, and other varied measures have been broached and even initiated, but I am not aware of any systematic and successful endeavor in our own country in the direction named.

In England a measure of success has attended the organized efforts of "The After-Care Association," though it is significant that in a recent summary of its objects prominence is given to the assistance which may be rendered in the return to care and custody of convalescents who relapse in the struggle. A society which accomplished this purpose alone would not be without its value.

My preparatory reading of the records of by-gone Association meetings, and coincidently, of the annual reports for the concurrent sixty years of the particular institution to the superintendency of which I have succeeded have not alone furnished support for the contention that there is nothing new under the sun, but, per contra, have suggested other topics which, if not new, are at least undisposed of. But I content myself with the few which I have already laid before you.

Whether or no it is the human, though little creditable impulse that comes to one escaping perils to dwell upon them in the ears of those who must remain to face them, I feel the temptation to picture the snares and pitfalls that lie in the devoted superintendent's thorny path—the want of appreciation, or, worse, the mis-appreciation, of the public; the vagaries of legislators; the wailings of the journals of different shades of yellowness, from lemon to orange.

The old gentleman of the fable who amiably and conscientiously sought to follow the conflicting advices of successive counsellors in applying to the solution of the problem of intraurban trans-

portation the then prevailing motive-power, the patient ass, has long stood for the embodiment of uncomplaining submissiveness. As matter of fact, he was probably an over-rated sufferer as compared even with his congener of the present day of united and amalgamated and brotherhooded critics. At least he was not in the same class as the all-suffering psychiatrist who finds his pre-lethal purgatory in the public service.

Perhaps the fact that custom opens to the ladies at least that session of the Association's meeting at which the Presidential address is ordinarily delivered, and the consequent vista presented to me of gentler amidst sterner visages, suggest a reference to the trials that may come to you through the less gentle fragment of the gentle sex. I do not mean to disparage the great, good work that is constantly being performed by good women, official or unofficial, in behalf of the insane. If nothing else, the recollection of such work of the former kind as was performed within our Board of Managers, when we had such a Board, would debar me. I have in mind rather the proffers of the self-constituted and the unequipped, for we have always with us the older lady who, quite unable to manage her own household of two or three domestics, has yet definite and obtrusive views of the proper relation of the superintendent to his five or six hundred subordinates; or the young lady sophomore who, after two or three months of settlement-work, feels quite fitted and inspired to point out to the same delinquent the mistakes and fallacies which have marked and marred the decades of his service.

But I think of one class among the gentler sex whose members are fulfilling a certain great mission which has fallen in their way, so quietly, so unostentatiously, so modestly, bringing comfort and support alike to patients and to servitors, that their need is seldom recognized, and their public praises never sung. I doubt if even my present auditors will at once understand to whom my words apply—the wives of hospital superintendents.

And now, gentlemen and ladies, there are other topics to which it was my purpose to refer, but I feel that at the present juncture I am perhaps in better accord with my audience than I may again establish, and I prudently desist, thanking you for your consideration and courtesy, again for the high honor which you have conferred upon me, and bespeaking prosperity and success for our Association and for yourselves severally.

A CONTRIBUTION TO THE STUDY OF THE RELATION OF GENERAL PARALYSIS AND TABES DORSALIS.¹

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The intimate relation of the problems of psychiatry and neurology is well recognized, but the study of these associated problems has been fraught with difficulties, because of the arbitrary separation of neurological and psychiatric material. A beginning, however, has been made, tending towards the union of psychiatry and neurology by a more general recognition of neurological symptoms occurring in the various psychoses, which is made possible by the newer methods, lately introduced in insane hospitals.

The progress of the pathological work in these hospitals within recent years has lessened our difficulties, while greatly stimulating the clinical work. Without accurate clinical data which can be correlated with the anatomical findings, the large amount of material found in our insane hospitals is necessarily of little value in furthering our knowledge of these associated problems.

The present paper is the outcome of the more careful study of the symptomatology of general paralysis at the Worcester Insane Hospital, under the direction of Dr. Adolf Meyer, where from the large amount of material it was possible to select cases that could be thoroughly studied from beginning to end. The work was completed in the laboratory of the Danvers Insane Hospital.

That an intimate relation does exist between general paralysis and tabes dorsalis is now generally accepted, and some authors claim that the two processes are identical, from the association of clinical symptoms and from an anatomical standpoint.

The object of this paper is to present the recent investigations upon this subject and to supplement this with a series of twelve cases, carefully analyzed, clinically and anatomically.

¹ Abstract read before the New England Psychological Society, Taunton, Mass., September 27, 1904.

Our knowledge of tabes dorsalis, we principally owe to the classical work of Westphal, who described accurately the anatomical lesions of that disease, and the same author was the first one to describe, in 1878, a case of general paralysis and co-existing tabes dorsalis. Moeli reported a similar case three years later. Since then valuable contributions have been made by French and German writers. Among the first to suggest the unity of tabes dorsalis and general paralysis, after Westphal had shown their similarity, was Raymond, and he was supported by J. Nageotte, who published his "*Tabes et Paralysie Générale*" (Paris) in 1893.

Nageotte bases his opinion upon:

1st. The frequent occurrence of tabes in general paralysis, showing that general paralysis is accompanied by tabes in two-thirds of the cases, and that all forms of general paralysis and tabes may intermingle.

2d. That frequently in the earliest stages of tabes, general paralysis appears, in which cases the primary disease becomes general paralysis in its course.

3d. In the brains of tabetics that did not show marked signs of general paralysis during life, changes were found in the cortex, which were identical with those of general paralysis.

4th. Cases of general paralysis, that often become tabetic in time, in which case tabes is masked by the cerebral affection. However, both diseases may appear at the same time and run a parallel course.

5th. In all cases it can be shown microscopically that genuine tabes and genuine general paralysis existed.

Nageotte was opposed by Joffroy, Rabaud, and Ballet, who held the view that the two diseases were entirely separate and distinct, seldom found together and then only as a coincidence.

Fournier, in 1894,² agrees with Nageotte and frequently quotes the latter.

In concluding, Fournier speaks of:

1st. Multiplicity of symptoms common to the two diseases.

2d. Possible combinations of the morbid types.

3d. Identity of causes.

² *Les Affections Parasyphilitique*, Chap. 31, 1894.

4th. Similarity of evolution and termination of the two processes.

5th. Anatomical analogies.

He says further, "Are not tabes and general paralysis topographical expressions of the same morbid entity,—as two branches of the same tree—as two geographical localizations of the same disease? Consequently, in their interpretations we have a unified disease, which, if localized exclusively, or in a manner more or less prominent, in the spinal cord constitutes tabes, which, if in the brain constitutes general paralysis, which, if it affects at the same time the cord and brain, constitutes a mixed type—cerebro-spinal tabes.

Gaupp,³ while he does not deny the similarity of these diseases and admits that uncomplicated posterior column degeneration in general paralysis is identical with tabes, prefers to keep them separate and distinct from an anatomical basis.

Feurstner and Schmaus also regard the two diseases as entirely different from an anatomical standpoint.

Among recent authors who have investigated this subject, must be mentioned Schaffer.⁴ This author, after treating thoroughly tabes, goes into the discussion of the relation of tabes and general paralysis, reviews the literature, and in a most convincing manner supports Nageotte's position.

Mention of the subject is made in most English text-books, but opinions either for or against the similarity of the two processes do not carry much weight because they are not based upon actual investigations. The principal English work is that of F. W. Mott.⁵ He reports a series of cases carefully studied clinically and anatomically. His work is of especial value because of the position he holds, connected with neurological clinics as well as Pathologist to the London County Asylums, whereby he has been able to observe both tabes and general paralysis. He very strongly supports the theory of the unity of the two diseases.

³ Über die spinalen symptome der Progressiven Paralyse, Breslau, 1898.

⁴ Anatomisch-Klinische Vorträge aus dem Gebiete der Nervenpathologie, Jena, 1900.

⁵ Tabes in Hospital and Asylum Practice; Archives of Neurology, Vol. II 1903.

Upon the following points then, those in favor of this unity base their opinions:

1st. The frequency with which tabes complicates general paralysis.

2d. Identity of the etiology of each.

3d. Occurrence of symptoms in each common to both diseases.

4th. Similarity in the onset and progressive course of each.

5th. Anatomically both diseases show lesions of a similar order, but of different locations in the central nervous system.

We will confine our discussion principally to the similar etiology, symptomatology, and pathological anatomy as shown in our series of cases. As the similarity of the onset and course of both is apparent to all, it needs no particular comment.

FREQUENCY OF CO-EXISTING TABES AND GENERAL PARALYSIS.

The intimate relation of the two diseases is best shown by their association in the same subject, and to this class of cases the name *tabo-paralysis* has been given. Although this term was formerly used to denote only the cases of pure tabes, which later in their course showed the occurrence of general paralysis, it is now used to cover all the cases which show symptoms of tabes and general paralysis occurring in the same individual. For convenience they may be grouped under three forms, although Nageotte gives eleven combinations, from simple tabes to simple general paralysis, and reports cases, illustrating each form.

The three forms are:

1st. Cases that begin as tabes and later become general paralysis.

2d. Cases of general paralysis that later become tabetic.

3d. Cases in which both diseases occur at the same time and run a parallel course.

Cases of the first and third groups are more easily shown than those of the second, because usually the cases of general paralysis do not come under observation for several years after the onset of the disease, and at that time it is impossible to tell how long the tabetic process has been at work. In those cases the two processes must be considered as occurring at the same time, and in our experience the symptoms of general paralysis are more prominent.

The occurrence of tabetic symptoms in cases of general paralysis is more frequent than one would suppose. Statistics are based upon what symptoms one considers necessary to establish clinical tabes, therefore great variations will be found. Nageotte holds that the phenomena of tabes occur in two-thirds of the cases of general paralysis. Gaupp's investigations would place the percentage much higher, as he considers the absence of the pupillary light reflex in cases of general paralysis a positive sign of tabes. He reports thirty-eight cases of general paralysis, thirty-seven of which showed this phenomenon of tabes, and in all such cases degeneration of the posterior columns of the cord was found, in some cases only in the cervical region. He supports his opinion not only by the anatomical findings, but by the fact that in tabes the Argyll-Robertson pupil may be the only sign of that disease for years. He states that in general paralysis stiff pupils to light are usually found with absent knee-jerks, but this is not always the case, and can be found with exaggerated knee-jerks as well. No exact relation can be established, except that they are more frequently found with absent knee-jerks.

In looking over the statistics of one hundred and twenty-seven cases from the records of the Worcester Insane Hospital we find the following:

- Absent knee-jerks, 26%.
- Diminished knee-jerks, 6%.
- Exaggerated knee-jerks, 56%.
- Unequal knee-jerks, 12%.

If we base, then, the percentage of tabes occurring in general paralysis upon the absent knee-jerks as a constant symptom, it would make the percentage somewhat lower than is justified. However, we find cases with exaggerated knee-jerks and typical abetic degeneration in the posterior columns of the cord. Mott also reports similar cases; Joffroy and Rabaud give the percentage as one-third, which does not coincide with actual facts, as shown by the above observations. Another important fact to be considered, which was recognized by Nageotte, Shaffer, and Mott, is that, when the disease process predominates either in the cord or brain, in the former case the symptoms of tabes would be more marked and in the latter those of general paralysis.

It has also been shown that in cases beginning as tabes and

later becoming general paralysis, that tabetic symptoms would frequently be arrested somewhat at the onset of the later disease. Ataxia that was well-marked before the onset of general paralysis, afterwards will be almost entirely absent and other symptoms may follow the same rule. This is well shown in Case XI of our series, where the patient had a typical onset of tabes five years previous to admission to a hospital, and at time of admission, with the exception of absent knee-jerks and stiff pupils to light, no other signs of tabes could be demonstrated. In other cases where Tabes is the prominent picture the symptoms of general paralysis may be very slight and hardly recognized as such. The changes in the cortex will be correspondingly slight. The fundamental symptoms of tabes may be regarded as:

- 1st. Argyl-Robertson pupil.
- 2d. Absence of deep reflexes.
- 3d. Objective and subjective sensibility disturbances.
- 4th. Visceral disturbances (vesical and rectal paralyses, gastric crises, etc.).

It has been pointed out by Gaupp and others that a diagnosis of tabes can be made by the absence of the pupillary light reflex combined with any of the other symptoms, or even by the presence of the first symptom alone. Then we see that the occurrence of tabes with general paralysis is more frequent than a mere coincidence would warrant, as held by Joffroy and Rabaud, and its occurrence in two-thirds of the cases is supported by statistics.

ETIOLOGY OF TABES AND GENERAL PARALYSIS.

It is not our purpose to quote the various opinions regarding the etiology of general paralysis and tabes or to give the statistics of the various investigators. Since Eiseman and Topinard, in 1863, expressed the opinion that syphilis was probably the cause of tabes there have been many who were unwilling to agree to this doctrine, but of late years it is becoming more generally believed. As Gaupp, 1898, says, "The opponents of this theory have not all disappeared," and there will probably always be a difference of opinion on this subject. One of the strongest points brought against the syphilis theory by the opponents is the fact that a history of a previous infection cannot

be obtained in all cases. Yet, it is a well-known fact that in recognized tertiary syphilis where the patients are not necessarily insane and can give a correct account, if they desired or knew the facts, no larger percentage of syphilis is obtained than in cases of general paralysis. Lange, in Vienna, is only able to obtain a history of syphilis or demonstrate previous syphilis in 36½% of cases suffering from tertiary syphilis. It is only by investigating every case thoroughly and exhausting every means of ascertaining the existence of previous syphilis, that we can form any opinion upon the subject. We do not have to go very far back to find clinical records of general paralysis in our hospitals which contain no history of syphilis, yet it has been recognized abroad for some years as the most prominent, if not the sole cause of general paralysis and tabes.

We will cite our experience in compiling statistics from the records of the Worcester Insane Hospital, and those records were no worse than those in other hospitals at that period. If we begin with 1896, the year in which newer methods were instituted and select cases of general paralysis that came to autopsy, the majority of which were admitted before the new régime, the following is found:

Year.	Number of Cases G. P.	Syphilis.	Probable Syphilis.	No statement.	Unknown.	% Syphilis.
1896	12	3	..	9	..	25
1897	16	7	4	5	..	44
1898	15	9	4	..	2	60
1899	12	8	3	..	1	66%
1900	16	10	4	..	2	63
1901	12	9	2	..	1	75

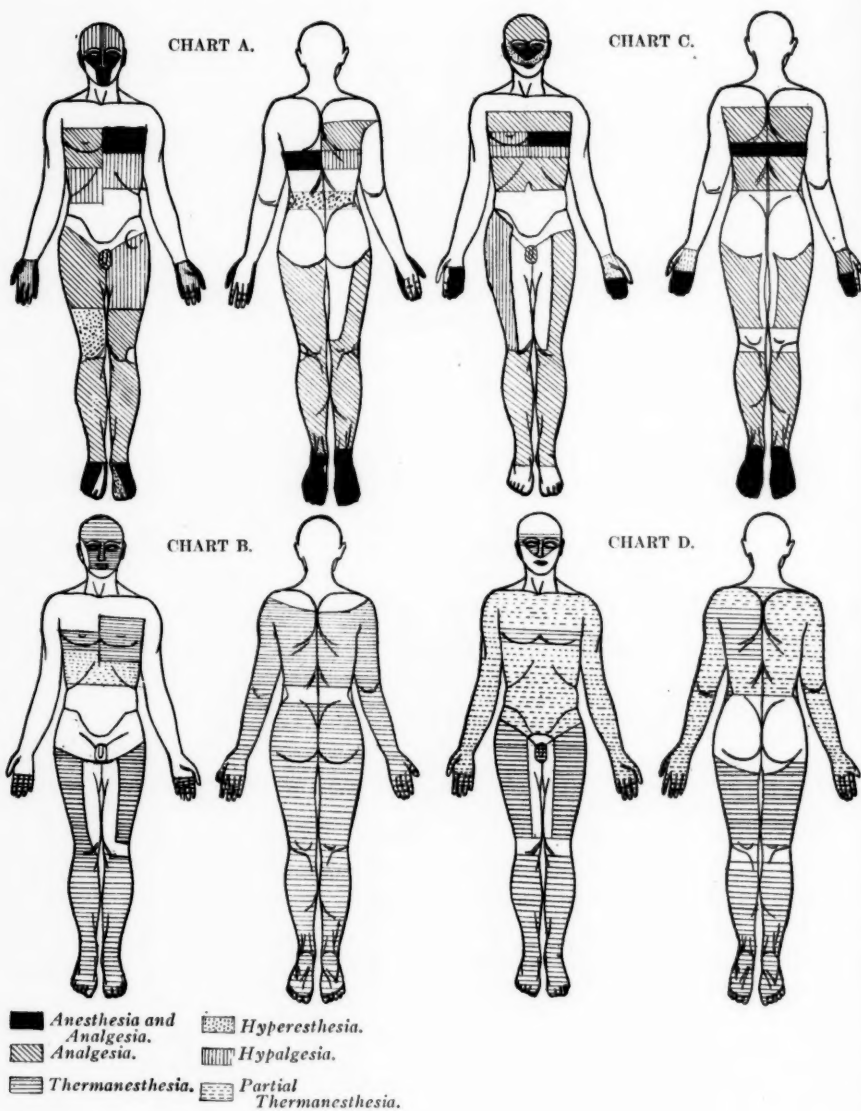
It takes but little study of the above table to show its significance; we see a gradual increase in the occurrence of syphilis in these cases of general paralysis, from 25% to 75%, and a notable decrease in the "no-statement" class. Is it because syphilis was on the increase that it was found more frequently in these cases? If so, and it was merely a coincidence, when found in general paralysis, it would then appear in other forms of mental disease. But such is not the case, for only a very small percentage of other psychoses show a history of previous syphilis. The reason, then, is plain, that previous to 1896 the subject of the relation of syphilis to general paralysis had not been thoroughly investigated,

but when more attention was paid to this subject the percentage showed a marked increase. As a further proof that this was not merely a coincidence in these cases reviewed, the other cases of general paralysis that did not come to autopsy were also examined, with similar results.

Cases of conjugal tabes, general paralysis, and tabo-paralysis have been collected by Mendell, Roeche, and Mott. Syphilis was found to be present in either husband or wife in all but one case collected by Mott, and in a large per cent of the cases reported by the others. This argues much in favor of syphilis as the origin of the two diseases. Another potent argument in favor of syphilis is also found in cases of juvenile general paralysis and juvenile tabes which have been reported, and the same etiological factor was present in the majority of cases of both, namely hereditary syphilis.

In tabes, the percentage of cases with a history of previous syphilis is much greater, as it is a much easier matter to establish this fact, than with demented general paralytics. Erb gives 90% with syphilis in a series of 900 tabetics and some writers give even a larger percentage. The occurrence of syphilis in other diseases of the nervous system is only from 16% to 24%. This would certainly go to prove that its occurrence in tabes was more than a coincidence. It seems hardly necessary to refer to the well-known experiment of Krafft-Ebbing, a few years ago. He inoculated a number of cases of general paralysis with syphilis and failed to produce that disease in any of them. In these cases syphilis was not only denied, but no visible signs of that disease were found upon the patients. Knowing the great virility of syphilis, also the law of immunity from subsequent infection, this experiment speaks much in favor of syphilis as the etiological factor in these diseases.

Because it is impossible in a small percentage of cases to establish positive syphilis, we are not justified in absolutely excluding it as a cause in these cases, and the weight of opinion seems to favor syphilis as the most important factor in the causation of general paralysis and tabes. Just how it acts in this role has not been satisfactorily explained, or why different portions of the central nervous system are selected is also unexplained. It is not warranted to presume that the syphilitic poison acts on the



NOTE.—Charts A and B, made from examination, November 12, 1900. Charts C and D, made from examination, December 4, 1900.

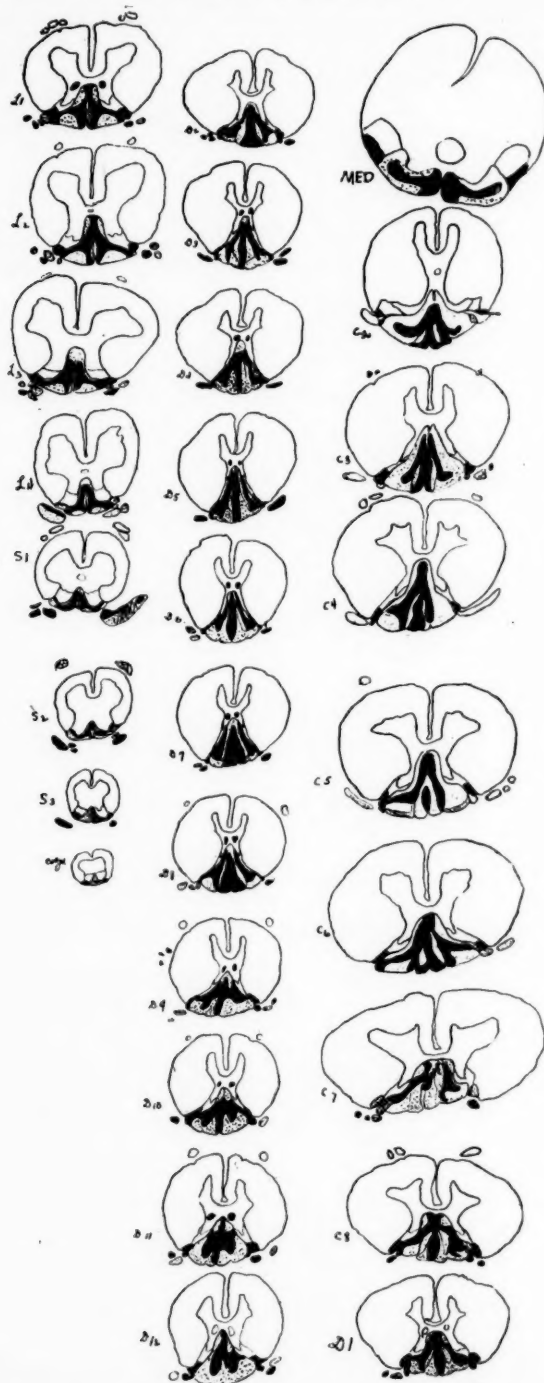
Case I.

III.

8

9

nd



NOTE.—In the diagrams of cord sections drawn with the aid of a camera lucida complete degeneration is indicated in black, and partial degeneration by black dots.

Case I.

central nervous system in a manner analogous to alcohol, lead, and other poisons, which may produce a morbid process in the brain, cord or peripheral nerves in different individuals, although the disease process attacking these various regions is essentially the same. This is the stand taken by Mott, and it seems reasonable. Just what factors determine this selection cannot be explained. In regard to the other so-called "causes" of general paralysis the following table compiled from 191 cases is of interest.

Other Causes.	% With Syphilis.	% Without Syphilis.
Trauma.....	2.6	1.5
Trauma and Heredity..	1.	1.5
Trauma and Alcohol..	1.	..
Heredity.....	7.3	3
Heredity and Alcohol..	3	5
Alcohol.....	6	3
Sunstroke.....	1	..

By looking over the above figures it will be seen that a grave error is made by giving equal prominence to the other "causes," with that given to syphilis. They are present in comparatively a very small number of cases. That they have an important rôle as accessory causes cannot be doubted, for they surely lessen the resistance of the nervous structures to the effect of the syphilis poison.

CASES.

Complete abstracts of twelve cases are herewith given, ten of which are from the records of Worcester and two from the Danvers Insane Hospital. They are selected because they present such clinical symptoms and anatomical findings as illustrate the various types of tabo-paralysis.

Case I.—*Tabes with mental symptoms (G. P.?). Classical tabetic symptoms. Expansiveness. Lack of judgment and deterioration. Epileptic seizures. Gastric crises. Lancinating pain in legs. Ocular paralyses. Syphilis probable. Died of lobar pneumonia. Duration eight years. Autopsy—Degeneration of posterior columns of cord. No typical changes of general paralysis in cortex.*

P. K. Aet. 48. Male. Married. Designer.

Family history shows some heredity. Paternal uncle insane. Father violent and uncontrollable temper. Brother insane, depressed, committed suicide. One sister of unbalanced mind. Paternal grandmother epileptic. On maternal side, marked eccentricity.

Personal history.—Patient was born in Germany. Early development normal. Common school education, and apt at studies. Good worker in woolen mill till æt. 26, when he came to America. He drank beer at times, but never was intoxicated. His wife claims he had some private disease in 1863, but it is denied by patient. Probably sexual excesses since marriage. No miscarriages are known of in wife. Patient was of a nervous disposition and especially when overworked. Had "rheumatic fever" just before coming to America. In fall of 1892, eyes became swollen, for which he was treated and cured. Again became inflamed in 1893 and he spent three weeks in a dark room. He went to Dresden for treatment.

The onset of his mental trouble was about at this time, 1893, while in Europe. Marked extravagances, buying \$1000 worth of shawls, laces, eight or ten suits, watches, etc. He returned in 1893 to take another position. After that he seemed strange, would sit and seemed absorbed, would not speak. In November, 1893, mill shut down (dull) and he became distracted and worried. It was then that he had his first "fit" during night and was unconscious for 15 minutes. He talked in German and did not recognize those about him. No incontinence. He worked next day, but after that was easily irritated, scolding and forgetful.

In January, 1894, patient had a second "fit." There was no incontinence of urine or feces, and no tonic or clonic spasms. He was unconscious for an hour, then random talk following. March, 1894, he had another fit, after which he became excited and dangerous. He climbed upon chiffonier, broke mirror, smashed dishes, etc. However, he was able to work the next day. Since April, 1894, forgetful. He would abuse the help because orders he had given had never been carried out. He became more scolding and unreasonable, frequently quarreling with wife and others. Resigned his position in 1894 after a row. He packed up all his things and left home while wife was away. About August 1, had another fit and from thence every six weeks or so. He became more forgetful, cross and abusive to children and wife. He was committed to Worcester Insane Hospital, March 15, 1895, as squandering money, refusing advice, control, or treatment, and displaying poor judgment.

At the hospital he was quiet, gentlemanly, admitting only two fits, and denying abuse. He was inclined to wander from the subject and was somewhat demented. April 9, had two fits—moan, head drawn to right, slight internal strabismus of right eye (persistent). There was amnesia for both fits. June 24, severe fit followed by marked facial paralysis, dullness, confusion, and difficult articulation. In November, constant fretting and brooding over detention, and on the 21st a slight fit; fell, but rose and walked alone. Winter of '95, pleurisy, shooting pains in legs (?) off and on. Last of September, 1897, unilateral interscapular pains, regarded as epileptic equivalent by patient because of accompanying gastro-rectal sensations.

October 27, physical examination shows mitral systolic murmur and moderate arterio-sclerosis. Patient complains of paroxysms, pain in

rectum and shooting pains in limbs. Argyl-Robertson pupils, external strabismus of left eye. Knee-jerks absent. Ataxic gait. Thick, stammering speech. He had several gastric crises. He escaped March 29, 1898.

He was again committed to Worcester, January 21, 1899, as being forgetful, abusive, and egotistical. He was violent and seclusive six weeks before commitment.

PHYSICAL EXAMINATION, JANUARY 24, 1899.

Eyes.—Pupils unequal, right slightly larger than the left. Immobile to light, only slight reaction to accommodation. Complete paralysis of left external rectus. Marked weakness of right external and internal recti.

Smell.—Probably normal.

Gait.—Uncertain, wide, and stamping. Marked swaying in Romberg, and incoordination of hand and foot movements. Facial movements weaker on the left.

Speech.—Defective. Marked slurring and stumbling since 1897.

Cutaneous sensibilities.—Touch normal, except on ulnar sides of hands and little fingers (especially right), on lower half of legs and on feet, also both sides of forehead. When touched with pin or with hot and cold tubes, often says, "You're not touching," though localizes finger tips well.

Pain sense.—Absent on both sides of forehead, ulnar sides of hands, especially right and lower half of legs and feet (especially outer sides of legs).

Temperature sense.—Not diminished except legs and feet, where discrimination is slow, though correct.

Reflexes.—Knee-jerks absent. Elbow- and wrist-jerks normal. No ankle clonus. Cremasterics and abdominals prompt.

Heart and vessels.—Temporals and radials thickened. Mitral systolic murmur heard in recumbent position.

Urine.—Nothing unusual except at times temporary albumen.

PROGRESS.—Patient continued about the same, at times showing marked expansiveness (especially in letters, claiming to be a great inventor, etc.). He had absolutely no insight into his condition, and showed marked deterioration and lack of judgment. He had frequent gastric crises, and lancinating pains in legs, which could only be controlled by morphia. Epileptic seizures were also frequent, for which he always had amnesia.

PHYSICAL EXAMINATION, MARCH 3, 1900.—Showed the disease to be progressing slowly. The knee-jerks and elbow reflexes are absent. Pupillary phenomena practically the same.

Cutaneous sensibilities.—Touch not impaired. Localizes promptly over whole body.

Pain.—Analgesia over ulnar surface of both forearms, both sides of forehead and cheeks, and both lower extremities. He feels the impact, but is unable to tell whether it is dull or sharp.

Temperature sense.—Reaction accurate except for both feet.

Muscular sense.—He is unable to tell position of toes, but he has no difficulty with the hands and fingers. There was decided fibrillary tremor of tongue and slurring, thick speech. *Gait* had become very unsteady and staggering. Unable to stand in Romberg position. *There was a typical jack-knife reaction of both legs.*

PHYSICAL EXAMINATION, NOVEMBER 12, 1900.

Patient was in bed at this time, suffering with lancinating pains of right leg. The physical signs were practically the same as in last note.

Cutaneous sensibilities.—*Pain and touch absent.*—Anterior part of cheek and chin, a wide band covering left nipple. Thumb, little finger, and extending to wrist, forefinger from first phalangeal joint on both hands. Both feet outer surface from second toe, and on right foot inner surface of big toe. Posteriorly, a band half way across back on left, below similar area anteriorly. Soles of both feet except inner side of left instep. Both thumbs and little finger to wrist.

Pain absent.—Anteriorly, a wide area over right nipple, right thigh to a point half way to knee where there was an area of acute hyperæsthesia even to touch on left thigh, the corresponding area the pain touch was absent, also both lower legs except for outer side of each knee. Posterior area over right shoulder extending across right arm, whole of left leg except for outer side of knee, outer side of right thigh, right leg, except for an area of hyperæsthesia on outer side of knee; genitalia. An area of hyperæsthesia extending across small of back.

Pain diminished.—Both sides of chest, but unequal in length below anæsthetic areas. Forehead and left thigh, palms of both hands and middle fingers. Posteriorly, a band corresponding on right to area of analgesia.

Temperature sense.—Absent anteriorly. Forehead and face, except right cheek and chin, areas on chest unequal on both sides. Fingers on both hands, outer side of thigh, both legs, except left knee. Posteriorly, whole of back except a band at small of back, arms, and legs.

PHYSICAL EXAMINATION, DECEMBER 4, 1900.

Patient was able to cooperate fully with physician in these tests. There were no lancinating pains in legs.

Cutaneous sensibilities.—Pain and touch absent on nose and both cheeks. A broad band covering left nipple to median line, one-half of palm, and three fingers on right hand front and back, and all fingers of left hand. Soles of both feet. Posteriorly a band just below the anterior band, on back.

Analgesia.—Anteriorly on forehead; a broad band above the nipples. Below, a band of diminished sensation including left and right nipple is another area of anæsthesia extending to abdomen. Outer side of left thigh, both lower legs and genitalia.

Posteriorly whole of back, thighs to within a few cm. of knees, then both lower legs below knees, and back of right hand. Pain diminished anteriorly, outer aspect of right thigh. An area of *hyperæsthesia* below cheeks to lower lip.

Temperature sense.—Absent anteriorly, eyebrows, nose, and cheeks, band across nipples, fingers of right hand, outer side of thigh to knees, genitalia. Lower legs from knees down and feet. Posteriorly, left shoulder and left half of back to middle of thoracic region. Both thighs to knees and lower legs below knees. Diminished over rest of body except under surface of knees, buttocks, and neck.

Patient continued in bed after this, becoming more demented, dull, and unable to co-operate. He died February 4, 1901, of lobar pneumonia. Autopsy sixteen and three-quarters hours after death—Dr. C. B. Dunlap.

SUMMARY.—Lobar pneumonia of left upper and lower lobes. Heart muscle opaque and soft. Kidneys, cortex turbid, pale, swollen looking. Atheroma, moderate, of aortic valves, ring, and beginning aorta. Granulation small and white on mitral flaps. *Brain.*—Weight 1640. Dura slightly adherent to calvarium. Pia of convexity milky haziness in sulci, especially over frontal lobes. About temporals toughened, making it extremely difficult to separate lobes. Vessels everywhere injected. Pia of base thin, but tough. Cisterna fairly clear. No distinct granulations can be made out in 4th ventricle.

Cord.—Pia of cord decidedly tough and somewhat thickened. Section in thoracic region showed considerable grayness in posterior columns. This is not so distinct in cervical, but marked in lumbar region. Unfortunately, the posterior ganglia were not studied systematically in the case.

Microscopical examination.—Brain-cortex stained by Nissl method.

None of the typical changes of general paralysis could be demonstrated in the sections examined (left frontal, right and left paracentral). Superficial layer of cortex is normal and cortical architecture is preserved. The vessels are somewhat thickened throughout the sections. Under high power, the nerve cells show but little change. The pia shows moderate thickening of connective tissue. Among the fibers lie cells, some of which contain yellow pigment. A few lymphocytes are found and an occasional plasma cell in the pia. The glia cells show no proliferative changes. Nuclei lie evenly scattered among the nerve cell layers. Most of these nuclei have bright yellow pigment granules around them and occasionally the nuclei lie in small groups. The blood-vessels have slightly thickened walls and often pigmented phagocytes lie in or about the vessel wall. None of the vessels show a true infiltration and no undoubted plasma cells were found in the sections examined. Other regions, however, were not examined and it is very unfortunate, as it is impossible to say whether general paralysis was or was not present in this case.

Cord.—A series was stained by Weigert Pal method for medullated fibers. The posterior roots below the 7th cervical, in some cases more than others, are degenerated down to the second lumbar and from that segment degeneration is less marked. The posterior root bundles showed a corresponding degeneration marked throughout the thoracic and lower cervical segments. Lissauer's tract was moderately degenerated, only the upper cervical region showing many fibers. The exogenous systems are

markedly degenerated and even throughout the endogenous systems there is slight degeneration. The ventral root zone is almost intact. The plexus of fibers around the cells of Clark's column is shown degenerated throughout its length. The ataxia was very marked in this case and certainly corresponds to the affection of the endogenous system and Clark's column. The cutaneous sensibility disturbances correlated with the degeneration of the posterior roots are shown in this case. The posterior columns are shrunken, distorted, and in some regions flattened. The meninges of the cord are generally thickened and show evidently meningitis. It is noticeable that the blood-vessels in the posterior column show more changes than those in other regions.

Case II.—*Tabes preceding general paralysis by three years. Circular form of psychosis. Lightning pains. Ataxia. Paralysis of rectum and bladder. Incoordination. Epileptiform seizures. Trauma and syphilis. Autopsy. Changes of general paralysis in cortex. Far advanced tabetic degeneration of cord.*

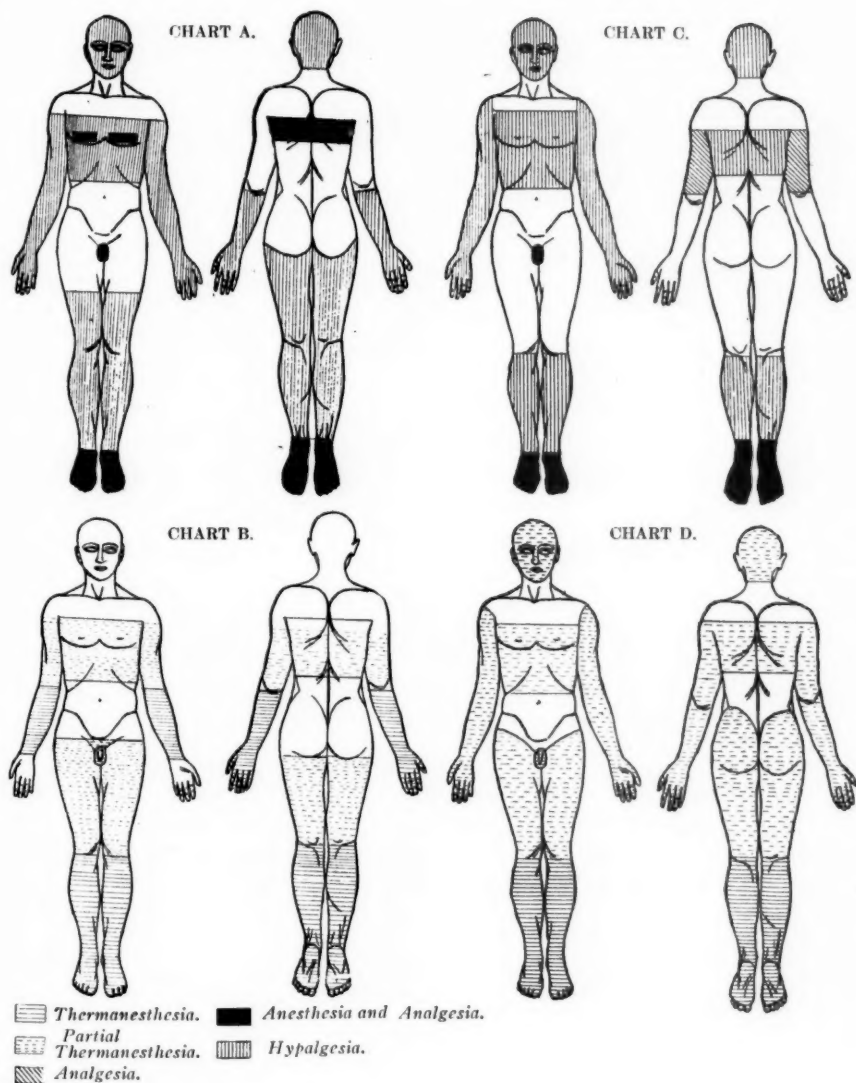
J. K. Aet. 42. Seaman and laborer. Widowed. Male.

Family history—Negative as far as known.

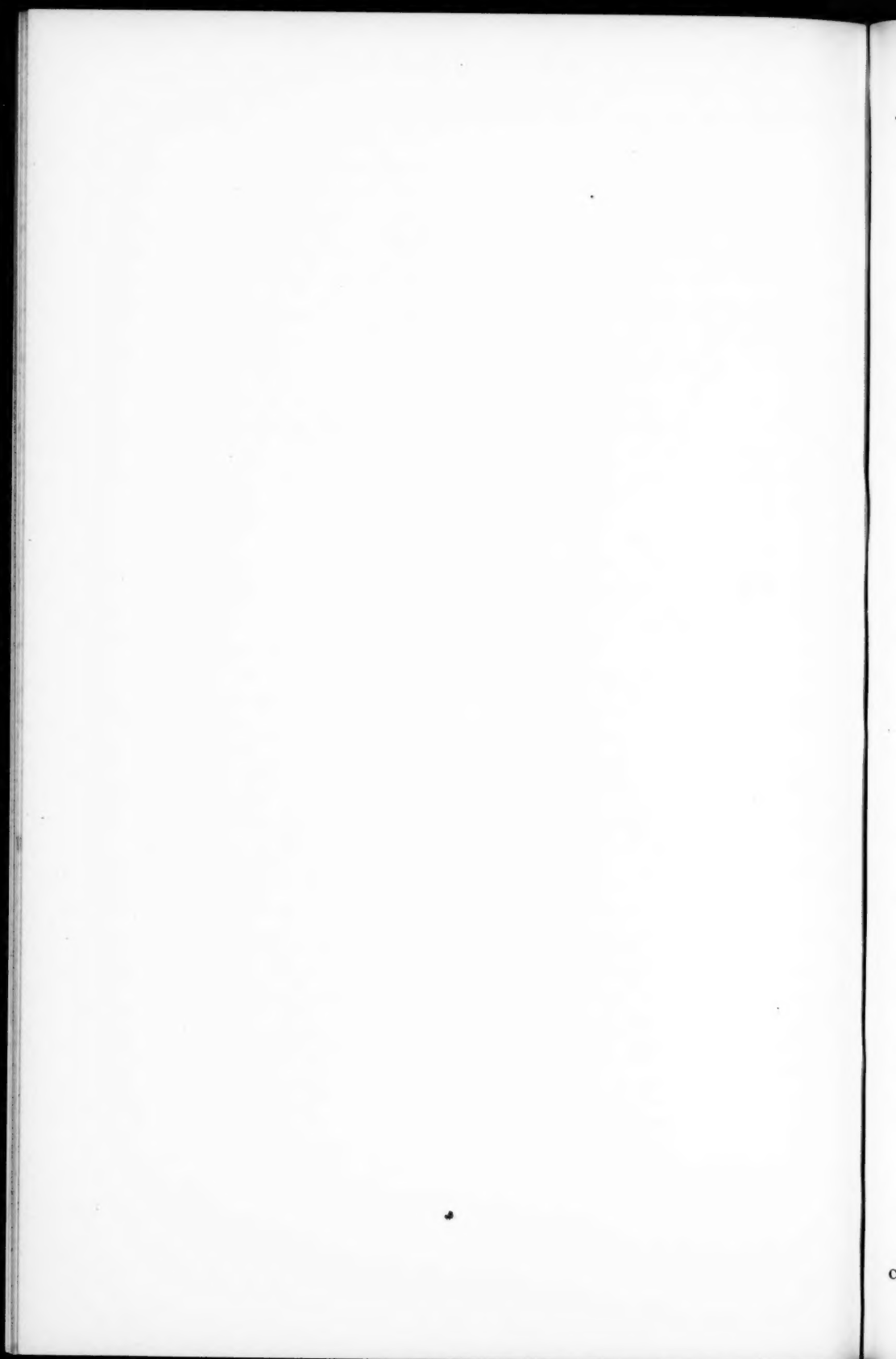
Personal history.—Born in Sweden. Early development normal. Came to the U. S. in 1883. Married in 1884. His wife had three children and three miscarriages. Two children died of marasmus. Patient admits having had syphilis.

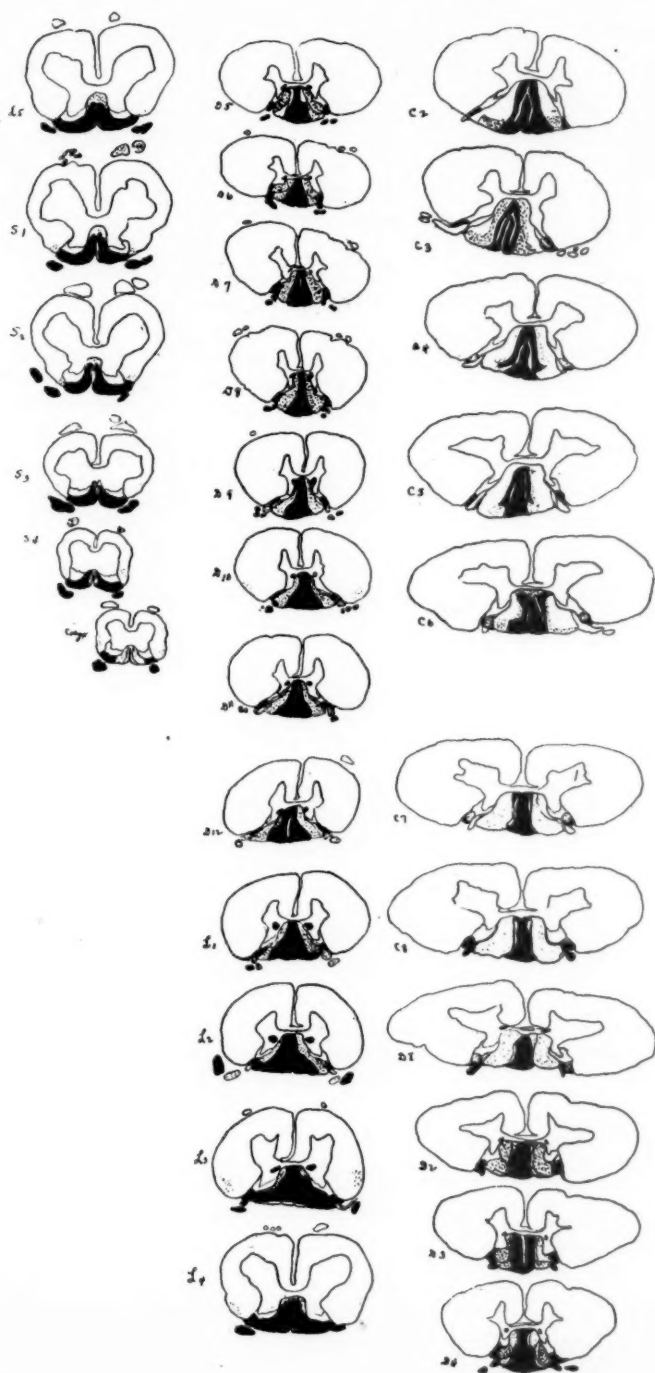
Illness and trauma.—Patient was healthy as far as known. Seven years ago he fell from a scaffold and landed on both feet and was considerably shaken up. A year later he began to throw feet in walking. About three years ago he had lightning pains in his legs, and lower part of back.

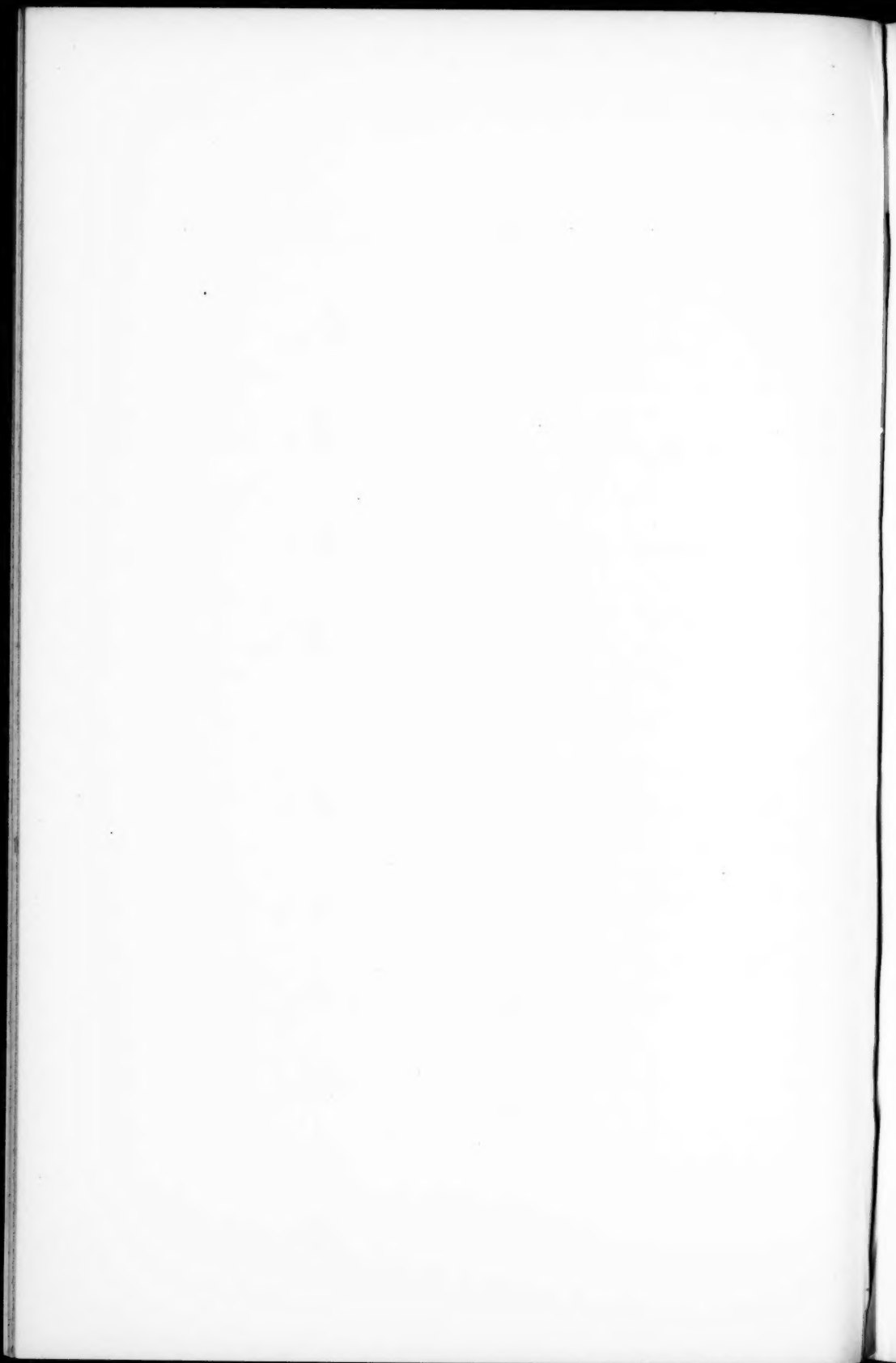
Onset of psychosis.—In 1897. He became much depressed and emotional at time of his wife's death. This spell only lasted a few weeks, after which he resumed his work. Two years ago he developed ataxia, and was unable to walk at times. He had frequent attacks of lightning pains in his legs. It was then noticed that his mind was unbalanced. He acted in a peculiar manner, became depressed and mute. He made no attempt to occupy his time, but remained in bed. These depressed spells alternated with periods of wild excitement in which he attempted suicide. This state of affairs became so grave that he was committed to Boston Insane Hospital on November 12, 1900. There he was reported as being excited, dull, and stupid. During the first five days he had periods of excitement, during one of which he attempted to strangle himself. At other times was depressed and could not be induced to talk. On the 14th of November he had an epileptiform convulsion. On the 19th there was inequality of the pupils—right larger. He apparently suffered much with pains in legs and girdle pains, and at times pain in head. He was very weak and was kept in bed under observation for two weeks. He continued to improve and was soon able to sit up all day. He was committed to Worcester Insane Hospital, December 6, 1900.



NOTE.—Charts A and B, made from examination, July 23, 1901. Charts C and D, made from examination, October 7, 1901.







On admission he could only walk with help, and resisted blindly the attentions of attendants and refused food. He was put to bed and complained of pain in bowels. He muttered and mumbled indistinctly in Swedish. The next day he was more restless and had to be catheterized because of retention of urine. He was fairly well oriented for time and place, but much confused, and had some insight into his condition. He soon became irresponsive, inattentive to questions, restless with some agitation when approached by anyone. He kept his eyes closed and was in a deep stupor.

PHYSICAL EXAMINATION, DECEMBER 18, 1900. (Patient was in above condition and did not co-operate with physician.)

Poorly nourished man of medium height. A great many small white raised scars over lumbar region and buttocks. Right nostril larger than left and covered with dried blood.

Eyes.—Beginning arcus senilis. Pupils equal, central and regular, 2 mm. No perceptible reaction to light or to squeezing, but both react to accommodation. Vision apparently not impaired.

Hearing and taste normal.

Smell somewhat affected on left side.

General sensations.—Complains of shooting pains in legs frequently, also pain in bowels.

Cutaneous sensibilities.—No areas of anæsthesia found. Touch not affected, though tests are unsatisfactory because of patient's indifference and stupor. Temperature sense not affected except on ankles and soles of feet.

Reflexes.—Knee-jerks, knee-cap reflexes, and Achilles and plantars entirely absent. Elbow reflexes not obtained. Forearm slight. Cremasterics slight on left, none on right.

Motor functions.—No facial paralysis, nor diminution of power of extremities. No tremor of the tongue. No marked incoordination of hand movements, but distinct in legs and feet. His legs flop about and gait was ataxic and staggering, unable to walk without assistance.

Speech.—No marked defect observed. Unable to speak test sentences.

Lungs.—Negative.

Heart and vessels.—Slight degree of atheroma. No murmurs. Pulse 80.

Abdomen.—Scaphoid in shape. No tenderness on pressure.

Bladder and rectum.—There was complete paralysis of bladder, necessitating daily catheterization, and bowels were only moved by enemata.

Urine.—1020. Albumen present. Excess of leucocytes, mixed with mucus. No casts. Later he developed cystitis which disappeared under treatment, and occasionally would urinate voluntarily, defiling bed.

PROGRESS.—He remained about the same, depressed, inactive, but did not resist the attention of attendants. He gave negativistic answers to all questions.

July 22, 1901. He seemed brighter, responded promptly and pertinently to questions. He exhibited a marked memory defect, but was oriented

well for time and place. Unable to explain depression, but said he had not been the same since wife died. Some emotionalism. No delusions or hallucinations elicited.

PHYSICAL EXAMINATION, JULY 23, 1901.—Same as last except for *Cutaneous sensibilities* (able to co-operate fairly well). Pain and touch lost over a quadrangular space around both nipples, genitalia, feet from ankles down, and a large band posteriorly just below shoulders. *Pain much diminished* over head, outer portion of chest, arms and legs from middle of thigh downward. Posteriorly, forearm and hands, whole surface of legs. *Temperature sense* diminished over chest and thighs anteriorly and posteriorly. Absent on forearms, lower legs, soles of feet, and genitalia.

He remained the same, becoming more cleanly in habits, passing urine, and his bowels moved without enemata. On September 3, 1901, he was visited by a friend, whom he recognized and talked about family.

October 7, 1901. Patient was somewhat brighter. Remained in bed. oriented for place, but not for time. Marked memory defect. Some insight into his condition.

PHYSICAL EXAMINATION (same date).—Practically the same as formerly. Speech showed more slurring in test sentences. More tremor of tongue.

Cutaneous sensibilities.—Patient co-operates fairly well. Sense of touch present everywhere except genitalia, all of feet below ankles, where pain is also absent. Pain absent on posterior surface of upper arms. Much diminished over chest to rib margin. Anterior aspect of arms and hands and lower legs, head front and back posteriorly, back and lower legs.

Temperature sense.—Much diminished everywhere except upper part of chest, abdomen, upper part of back, and middle of back to buttocks. Absent, genitalia, lower legs front and back.

He gradually became more talkative, showing more spontaneity. On December 4 he told the physician that he heard voices talking about him, and thought he was being persecuted. He soon developed delusions of persecution (the attendants wanted to get rid of him because he had no money). He gradually became very talkative and showed marked spontaneity and activity, also some exhilaration (was as a new man and wanted to go out to work; felt fine). He was voluble and exhibited flight of ideas and formal associations. He was unable to explain his depression. He admitted having had syphilis for the first time.

PHYSICAL EXAMINATION, DECEMBER 17, 1902.—Same except for *cutaneous sensibilities*, which show a marked change. Touch absent on feet below ankle and diminished over a small area on anterior surface of upper arm. *Pain* sense diminished over chest except for a small longitudinal area in median lines, outer surface of both lower legs, and head, front and back. Wide band across back. Areas of anæsthesia found on inner surface of forearm anteriorly and posteriorly, upper arm, and inner side of forearm. *Temperature sense* absent on both feet below ankle and penis. Diminished upper part of each arm, both legs front and back. Small area lower part of back and posterior aspect of hands.

He was able to co-operate fairly well, but soon showed marked manic traits. Sample of production:

(Shown keys) "These the keys—brass keys, monkey, all kinds of keys—play monkey, they have whiskers on their face, cocoanut, milk same as hard coffee, caught some from Persia." He was very irrelevant and flighty and talked rapidly whenever spoken to, in above strain, distractible, rambling, and incoherent. A specimen of his handwriting showed characteristic tremor. He became more excited and exhilarated, whistling and singing, and soon this state alternated with periods of depression. In the morning he would be in deep depression and without any warning he would become maniacal, and these sudden changes kept up for six weeks, when he began to fail rapidly. He became destructive to clothing and filthy, and completely lost as to his surroundings. He became more excited, talking all the time.

He died March 31, 1902, of lobar pneumonia. Autopsy four and a half hours after death—Dr. C. B. Dunlap.

SUMMARY.—Lobar pneumonia of both lower lobes. Ecchymoses in mucous membrane of stomach. Mesenteric glands enlarged. Thickening of mitral and tricuspid valves. Brain, weight 1385 grms. Moderate amount of slightly turbid fluid in pia, very little in subdural space (100 cc. drawn off by lumbar puncture). Pia of convexity in frontal and central regions is hazy, with many yellowish-white clumps in posterior half of first frontal convolution and about upper parts of central, also some yellowish streaking in this area. Pia thickened in front of anterior central convolutions. Between frontal lobes pia is very tough and adherent to brain substance. Left sylvian fissure contains a cystic cavity, broken open in removal, which leaves the fissure widely open. Arteries, a few small clumps of yellowish-white thickening in Sylvian, but posterior cerebrals are free. No granulations seen by artificial light in 4th ventricle.

Cord.—The posterior median columns in cervical region are distinctly gray and translucent as far down as 10th thoracic segment. There is a gray line in cervical segments and in upper thoracic where posterior roots enter. Between this and the posterior median columns the posterior lateral columns can be followed down as a white streak to about 7th thoracic segment on the left and the 10th on the right. These streaks become narrow in the thoracic region and face out indefinitely. The roots are distinctly gray in the lumbar and sacral segments. This is very striking and the anterior and posterior roots can be easily distinguished in *corda equina*. Other roots which are decidedly gray are those of twelfth thoracic—L. th 11, L. th 2-3-4-5 with the corresponding slight grayness in the roots of the right side of the last four segments. There is little difference in anterior and posterior roots in the cervical segment.

Microscopical examination.—Cortex by Nissl method shows well-marked and advanced changes of general paralysis.

Cord.—Schaffer's method for medullated fibers.

The posterior roots and root zones are intact as far as the 6th cervical region, but in the 7th are degenerated and from there to the 8th thoracic

these zones are completely degenerated. The lower thoracic roots have some fibers intact; also the first three lumbar segments, but below this they are completely degenerated. The posterior root degeneration in this case corresponds with the affected areas of cutaneous sensibilities as shown in the diagram. Lissauer's tract shows some fibers in the cervical and upper thoracic segments, but they are few and below these segments the tract is almost completely degenerated. The column of Goll is completely degenerated. Some degeneration is seen of the comma tract, ventral posterior zone, and other endogenous systems. Clark's column shows degeneration of the plexus of fibers and the great ataxia seen in this case is well accounted for. The posterior column is somewhat flattened, especially in the lower segments and meninges slightly thickened.

Case III.—*General paralysis and tabes coincident. Demented type. No history obtainable. Syphilis not established. Rapid progression. Epileptiform seizure. Duration two years (?). General paralysis changes in cortex. Cord. Posterior column degeneration. Right knee-jerk returned after convulsion of right side.*

G. W. R. Aet. 61. Carpenter. Single. Male.

Family history.—Unknown.

Personal history.—Patient was born and has lived in Millbury all his life. He was single. Beyond this nothing could be learned, as he had no friends. He was committed to Worcester Insane Hospital, January 7, 1902, as being wild and excited, talking a great deal, and fabricating. He had a finger amputated some time before admission and he tore the dressings off constantly. He had been sleepless at night and kept everyone in the house awake by his noisy actions.

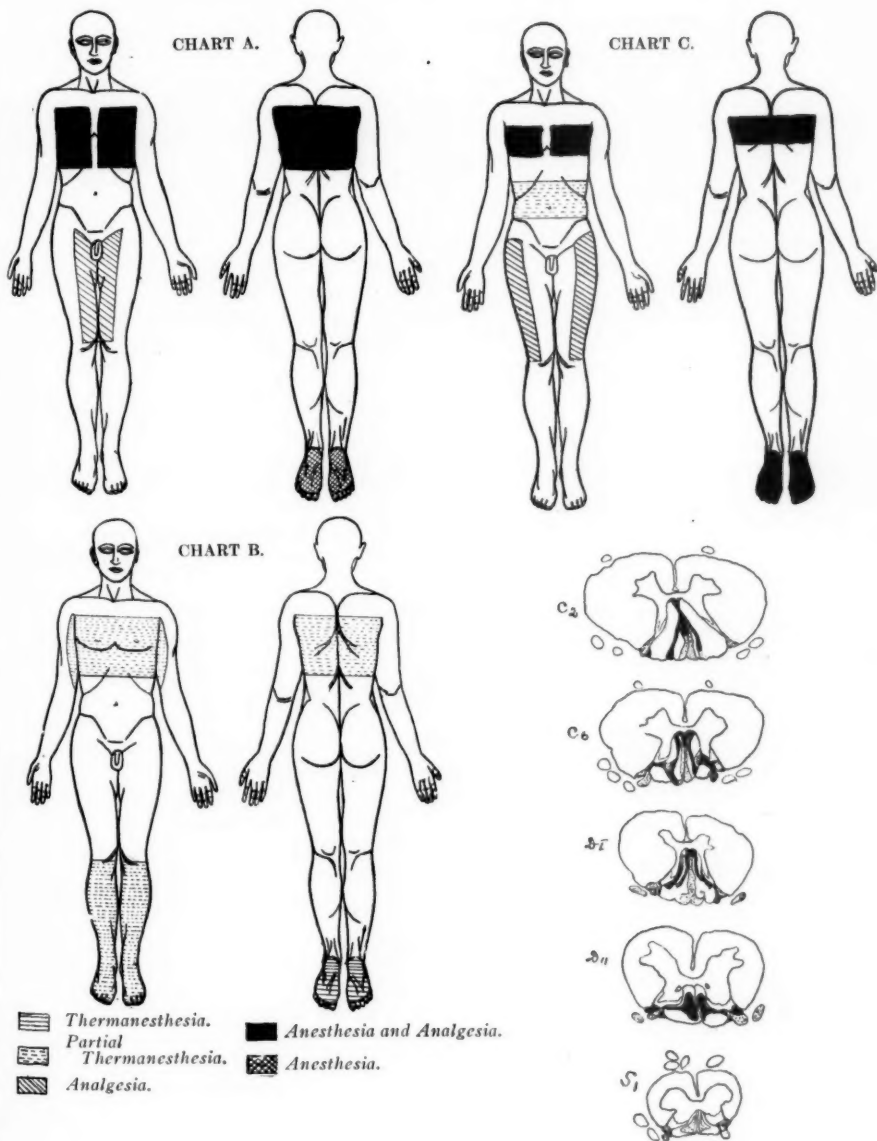
On admission he was noisy, resistive, and much demented, unkempt in appearance, and filthy in habits. He was very weak and not able to walk without assistance, so he was put to bed. He soon became more quiet, but remained somewhat exhilarated and talkative.

Mental status taken January 14 showed a completely demented man, entirely lost as to his surroundings and unable to give any clear account of himself at all. He answered questions in a rambling, incoherent manner, showing little appreciation of what was asked. It was difficult to keep his attention and questions had to be repeated many times. He had absolutely no memory and intellect was very much deteriorated. No insight whatever into his condition.

PHYSICAL EXAMINATION at this time was rather unsatisfactory, as he would not co-operate with physician.

An elderly man, somewhat emaciated, with flabby musculature, general condition poor. Tibial crests rough and saw-like. No enlarged glands noted. Circulation poor with a considerable degree of arterio-sclerosis. General feeling of well-being and contentment.

Eyes.—Beginning arcus senilis. Pupils equal, central, and regular, pinpoint in size and no appreciable reaction to light or accommodation. Vision impaired, but no hemianopsia.



NOTE.—Charts A and B, made from examination, January 9, 1902. Chart C, made from examination, January 19, 1903.



Hearing.—Much impaired in both ears.

Taste and smell not impaired.

Reflexes.—Knee-jerks, knee-cap, and Achilles absent on both sides. Elbow and forearm reflexes normal. Cremasterics and abdominals brisk. Plantars normal.

Cutaneous sensibilities.—*Pain and touch* lost over both nipples in broad band from axilla to costal margin, except in median line, where it was present. This girdle extends also posteriorly on back. *Touch* lost also on soles of both feet. *Pain* absent anterior surface of both thighs, also on forehead. *Temperature* sense diminished over areas of anæsthesia anteriorly and posteriorly, especially for heat, lower legs and inner portion of both arms, absent on feet below ankles, otherwise normal.

Motor functions.—No facial paralysis. Tongue median with marked fibrillary tremor. Tremor of lips when talking and distinct coarse tremor of hands and fingers. Marked incoordination of feet and hand movements. Grasps and general muscular power poor but symmetrical. *Gait* ataxic, unsteady, and tottering. Much swaying and unsteadiness in Romberg position.

Speech.—Marked defect in ordinary conversation, rolling, slurring and stuttering, hardly intelligible.

Writing defective with characteristic tremor.

Sexual organs.—Scrotum deeply discolored and a dark red color. No penile scar, and syphilis denied, though statements are not reliable. Urine negative.

PROGRESS.—Patient improved for a while, but never could give any clear account of himself, because of his profound dementia.

The knee-jerks remained persistently absent and general condition became progressively worse.

Examination for sensibility disturbances showed very little change and patient would not co-operate well.

Cutaneous sensibilities (January 19, 1903).—*Pain and touch* absent over nipple in narrow girdle broken over sternum where sensations are not impaired. This girdle extends posteriorly also. Absent on soles of both feet. *Pain* absent outer side of thighs anteriorly. Otherwise normal. *Temperature* sense much diminished in a girdle over abdomen, and soles of both feet where it is apparently absent at times. Patient reacts better than in former examination.

February 1, 1903. He had a slight apoplectiform seizure involving right side, and has since been in bed, as he is failing steadily. After this seizure the knee-jerk returned on right side and persisted for several days. He had several epileptiform seizures and grew more demented, and died May 20, 1903, of lobar pneumonia.

Autopsy a few hours after death.

Brain.—Weight 1380. Dura thickened and adherent to calvarium. Substance soft over frontal lobes, which lobes are atrophied, also the parietal lobes. Considerable œdema. Pia thickened over frontal lobes and hazy. Basal arteries atheromatous. Granulations found in 4th ventricle.

Heart.—Vegetations of mitral valve. Calcareous plates in aorta. Coronaries atheromatous.

Microscopical examination of cortex—well-marked typical changes of general paralysis.

Cord.—Shaffer's method for medullated fibers. Cervical region—Lissauer's tract partially degenerated. Posterior root bundles are not degenerated, but some degeneration seen in the entering roots and in lower cervical the root zone is degenerated. There is the typical Y-shaped degeneration in posterior columns and partial degeneration along median line. In thoracic region the posterior roots, root zone, and root bundles show some degeneration and Lissauer's tract is almost completely degenerated. In 12th segment of this region the degeneration of posterior columns takes the typical triangular shape corresponding to 3d foetal system, showing endogenous systems intact. The fibers around cells of Clark's column are not much affected in this case. The entering roots show only partial degeneration, especially in lower lumbar region, and it is significant, as he, at one time, had present knee-jerks after a convulsion. The degeneration may be considered as slight when compared with Cases I and II, and the ataxia is much less marked. In this case the cutaneous sensibility disturbances were slight at first, and later patient became too demented to co-operate.

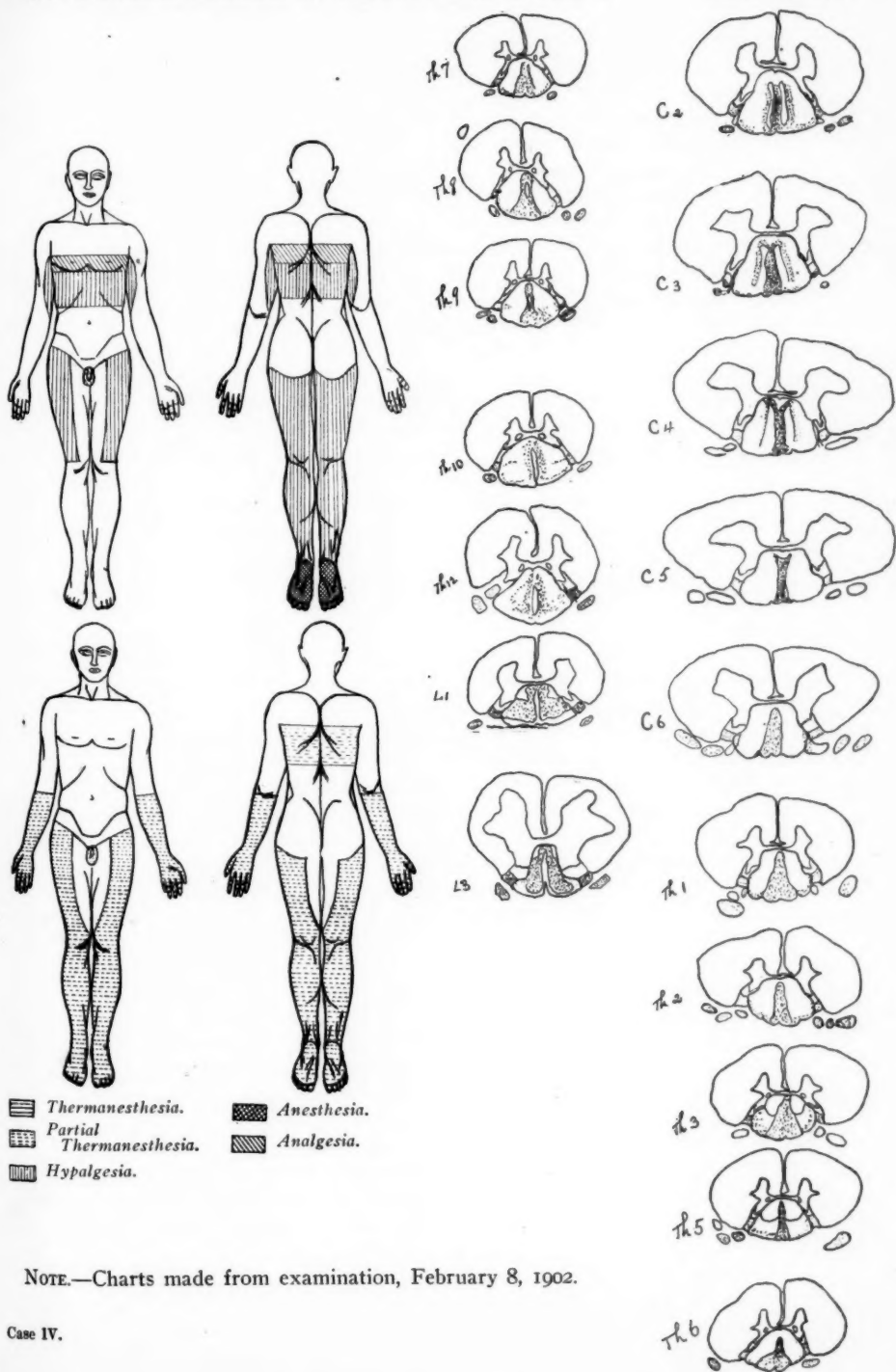
Case IV.—*Tabetic general paralysis, slowly dementing form. Progressing sensibility disturbances. Syphilis. Three years' duration. Autopsy. General paralysis in cortex and slight posterior column degeneration.*

W. A. W. Male. Aet. 41. Married. Marble cutter.

Family history.—No heredity nor neuroses.

Personal history.—He was born and has lived in Cambridge all his life. Early development essentially normal, but he never was very robust. He attended school till the age of 12, and was considered a bright boy. His right eye was injured when a boy, but not seriously. Later he had an abscess of right eyelid, which resulted in ptosis of that lid. He has been a steady marble worker, always earning good pay and supporting his family. He admits syphilis in 1881. He was married in 1887 and his wife has had two children and two miscarriages. He has always been healthy, but never very rugged. He has indulged steadily in alcoholics since æt. 20, and since marriage he has been frequently intoxicated. He had two falls while intoxicated, but none of them were serious.

Onset of the psychosis.—Was gradual during April, 1901. At first it was noticed that he talked a great deal about his work, fabricating about it, exaggerating it, dwelling on details. Then he became trifling, and was discharged May 15, the same year. There was no noticeable impairment of memory at first. He had severe headaches and he became very emotional and irritable. Soon there was a complete change of character. His sleep became impaired and he would spend the night talking about and fooling with his tools. A week before admission he probably had auditory and visual hallucinations (he claimed to hear God talking to him and



NOTE.—Charts made from examination, February 8, 1902.

Case IV.



blessing him, also that he heard and saw angels all about him and heard music). There were no delusions and he was perfectly tractable.

He was admitted to Worcester Insane Hospital, May 20, 1901, and his mental condition was as follows: His general attitude on the ward was quiet, obedient, affable and pleasant to all, and apparently contented. He did not occupy his mind with anything of importance, but remained in his room arranging his effects and in doing insignificant and inconsequential things. He entered freely into conversation, but the trend of his talk was childish and he dwelt on petty topics, into which he would go with much tediousness of detail. There was a general feeling of well-being and contentment and slight exhilaration. He denied any hallucinations, but admitted queer dreams at home. There were no fixed delusions or expansiveness, but some vague ideas of persecution by Italians and Irish, where he worked. He exhibited rather illogical explanations of occurrences and vague misinterpretations. His memory was but slightly impaired and the sensorium was clear, with a good grasp upon his surroundings (even to minute details). He had absolutely no insight into his condition.

PHYSICAL EXAMINATION.—Well nourished and well developed. Complained of sick stomach and headaches at times, also fainting spells.

Eyes.—Slight ptosis of right eyelid. Pupils central and regular, but unequal (right 2 mm., left 4 mm.). Both pupils stationary to light and accommodation.

Hearing, taste, and smell normal.

Reflexes.—Knee-jerks, knee-cap, and elbow and Achilles reflexes absent on both sides. Plantars, cremasterics, and abdominals brisk, wrist-jerks slight.

Motor functions.—Slight facial paralysis on right side. Tongue median with gelatinous tremor. No tremor of the hands. Slight incoordination of foot and hand movements. Muscular twitchings at times on right side of face. *Gait* not very ataxic, but easily loses balance and shows much swaying in Romberg position.

Speech.—No marked slurring, but apt to transpose phrases and words in test sentences.

Writing.—No characteristic tremor, but some elision.

Advanced degree of arterio-sclerosis; otherwise nothing unusual in heart and lungs.

At this time a careful examination failed to reveal any disturbance of *cutaneous sensibilities*.

PROGRESS.—Patient remained in this condition, showing very little change, either mentally or physically. He often complains of sick stomach and persistent frontal headaches. His attitude remained the same, occupied with trifles, and his letters showed the same characteristics. His speech had become more slurring.

Cutaneous sensibilities (September 13, 1901).—*Touch and localization* not impaired except for sole of each foot. *Pain.*—No areas of anæsthesia, but a general dulling of pain sense, as he did not flinch when pricked.

Temperature sense.—No areas of analgesia except in sole of left foot, but a general dulling for *heat*. Patient is able to co-operate well and statements are reliable.

February 8, 1902. *Touch* absent only on soles of both feet. *Pain.*—Girdle of anæsthesia around nipple and posteriorly, also absence of pain in penis and testicles. Diminished pain sense below girdle of anæsthesia to a point half way between umbilicus and xiphoid cartilage, corresponding area posteriorly. Inner side of both arms from elbow to axilla anteriorly and posteriorly. Outer side of thighs anteriorly and whole of lower limbs posteriorly.

Temperature sense diminished, both arms from elbow outward. Penis and testicles, outer sides of thighs, and both legs, also a wide girdle below shoulders.

January 19, 1903. *Pain and touch*, practically the same areas as at last examination except for the lower legs and inner side of arms. Where pain was diminished before, it is present now. Temperature sense only absent on soles of both feet.

Patient remained in about the same condition until April, 1904. Then he became feeble, unable to walk about, and much demented, so he was put to bed. On April 21 he had two general epileptiform convulsions, one lasting one hour and the other three minutes, after which he seemed to fail rapidly. Developed hypostatic pneumonia and died June 23, 1904.

Autopsy ten hours post mortem—Dr. T. A. Hoch.

SUMMARY.—Deep decubitus over sacrum. Old pleuritic adhesions. Moderate degree of hypostatic pneumonia. Beginning arterio-sclerosis. Four pulmonary valve flaps in heart. Brain, weight 1150 grms. Dura adherent to skull cap over vertex. Large amount of cerebro-spinal fluid. Pia fairly thin, somewhat injected, and slightly milky over convexity. Atrophy of individual convolutions. Hemispheres separate readily. Pia tears the cortex when stripped. Cisterna hazy. Vessels of base thin and empty. Well-marked granulations in floor of 4th ventricle.

Cord appears normal to the naked eye.

Microscopical examination.—*Brain.*—Cortex stained by Nissl method shows typical, well-marked advanced changes of general paralysis.

Cord.—Schaffer's method for medullated fibers. Mild type of degeneration. The posterior roots in no segments show complete degeneration. Beginning at C-6 there is seen slight degeneration in all the root bundles. The entering roots and the root zones are slightly degenerated below C-6. Above this the degeneration is confined to Goll's column, except the small tracts of degeneration on the median border of Burdach's column. The endogenous systems are intact, and plexus of fibers in Clark's column are also unaffected. Lissauer's tract shows some slight degeneration throughout, but it is not marked. The degeneration is scattered throughout the exogenous systems. In the lumbar segments the degeneration takes the typical triangular shape as corresponding to the 3d fetal system.

This case, though examined several times for cutaneous sensibility disturbances, did not present very marked disturbances in that field, and that fact is in keeping with the anatomical findings.

Case V.—*Tabetic paralysis in a man at. 40. Paranoid traits. Slow deterioration. Syphilis twenty years before. Disturbance of cutaneous sensibilities slight and constant. Died of empyema. Duration three years. Autopsy refused.*

S. S. Aet. 41. Painter. Married. Male.

Family history.—Not obtained.

Personal history.—Patient was born in Scotland. Nothing known of early history, except what patient gave, that he had a meager education. Came to America in 1886, the year he was married. His wife had one miscarriage and three children, one of which died at aet. 6 of convulsions. He admits having a chancre twenty years ago, and he had a distinct penile scar when examined. He denied any secondary symptoms of syphilis. He worked as a painter.

Onset of psychosis.—According to physician who committed him, his mental trouble came on gradually in 1899, but no definite statements were obtained. He was committed to the Worcester Insane Hospital, July 17, 1901, upon the following certificate: "Is depressed. Patient said for a long time his wife and others were conspiring against him. Has written various letters to his folks charging falsely various people with persecuting him. Changing mood and many fabrications."

At Worcester at first he was quiet and well behaved, cheerful and sociable. Rather sad and serious expression, occupied with reading. At times he was quite exhilarated. He reacted normally to questions and his stream of thought was normal. Orientation was perfect with a good grasp upon surroundings. Memory was but little impaired and intellect was not defective. Mental attitude: Delusions of persecution prominent, but variable and changing. At first he claimed the medical profession and hospitals had neglected his wife. Later he claimed that his wife and others had formed a plot to send him there and get his property. Marked self-abstraction. Absolutely no insight into his condition.

PHYSICAL EXAMINATION, JULY 18, 1901.

A well-developed and well-nourished man. Silver gray hair and moustache. No subjective sensations. General feeling of well-being.

Eyes.—Muscular movements normal. Pupils unequal (left 2.5 mm., right 2 mm.). Left pupil reacts sluggishly to light, the right just a trifle. Consensual reaction slight. Both react to accommodation. Vision impaired, especially in right eye.

Cutaneous sensibilities.—Unimpaired.

Reflexes.—Knee-jerks, knee-cap, Achilles absent on both sides. Elbow and forearm reflexes equally diminished on both sides. Plantars normal. Cremasteric diminished on right, not obtained in left.

Motor functions.—No facial paralysis. Gelatinous tremor of tongue. Coarse tremor of fingers. Slight incoordination of foot and hand movements. Gait not impaired. No swaying in Romberg.

Writing.—Slight tremor.

Speech.—No defect noticed.

Lungs.—Negative.

Moderate degree of arterio-sclerosis. Superficial varicose veins in both legs.

Heart.—Somewhat enlarged. Slight arrhythmia, but no murmurs.

Sexual organs.—Prepuce greatly thickened. Distinct scar on dorsal surface of glands, and he admits chancre. Urine showed a trace of albumin and a few hyalin and granular casts.

PROGRESS.—Patient remained about the same, at times denying delusions of persecution formerly expressed. He wrote a good many letters, trying to explain his position, and trying to get released. His wife died soon after his commitment and he was only slightly affected. He was usually quiet and good natured, but occasionally became irritable and abusive to attendants. He exhibited a slow deterioration, but was usually quite industrious.

PHYSICAL EXAMINATION, March 2, 1902, showed persistent absence of knee-jerks and Achilles. Pupils contracted and usually equal. No reaction to light, slight to accommodation. Tremor of tongue and fingers more marked, also of lips and more marked in writing. Speech showed more slurring and thickness.

Cutaneous sensibilities.—Touch not impaired except for genitalia. Pain absent on soles of feet, much diminished over chest, a band including both nipples and extending across back. Temperature sense slightly diminished over most of body and absent on soles of feet. No other areas found in subsequent examinations.

August 2, 1902. He had become quite weak and shaky and it was necessary to put him to bed. His heart was weak and rapid and respiration increased and labored. Examination of chest revealed a serous pleurisy with effusion on left side. Shortly after chest was aspirated and 1800 cc. of fluid withdrawn. He had been coughing some, raising bloody mucus. It was necessary to aspirate chest several times, but to no avail, as a few days later a distinctly foul-smelling fluid, pale wine color, was drawn off with considerable pus.

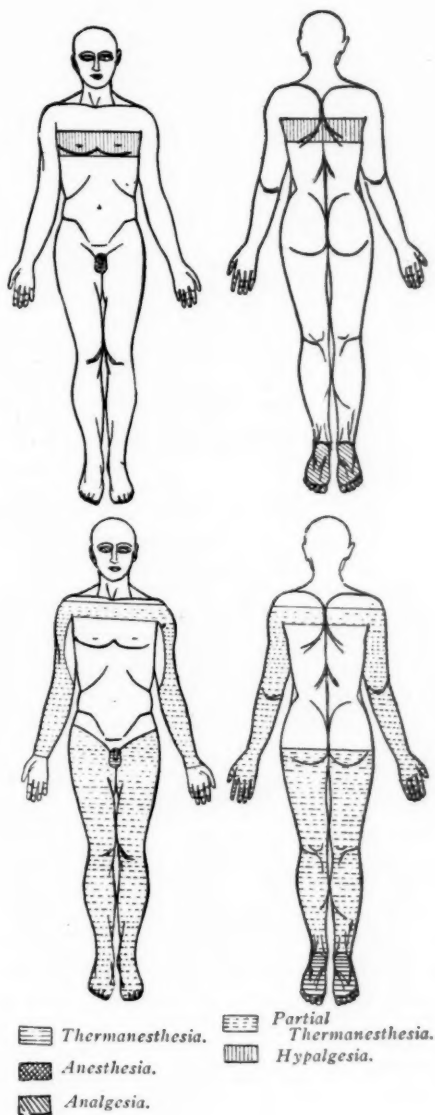
He died September 12, 1902, of empyema. Autopsy refused.

Case VI.—*Tabetic paralysis. Syphilis ten years previous. Depressed type. Suicidal. Atypical course—three years' remission. Tabetic symptoms well marked. No convulsions. Vesical paralysis. Death from cardiac failure. Autopsy. Typical changes of general paralysis in cortex. Cord—posterior column degeneration.*

A. V. B. Aet. 33. Single. Reporter. Male.

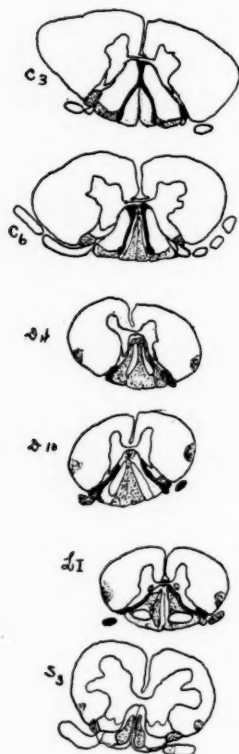
Family history reveals consumption on paternal side of family, but no insanity.

Personal history.—Patient was an only child. Born in Massachusetts, 1869. Early development normal, with a history of one convulsion at 18 months, due to treatment given by mother. He was a very bright scholar and entered high school at 11, leaving on account of father's death to work in round-house, later in mills and at odd jobs. From 17 to 25 in bakery business, and drank heavily, thirteen or fourteen whiskies a day; then as



NOTE.—Charts made from examination, March 2, 1902.

Case V.



Case VI.

reporter for eighteen months; then went in the bakery business again; only occasional glass of beer. Masturbation admitted in early life and excessive sexual intercourse since 20. He had five gonorrheas, and in 1892 contracted syphilis, and in 1894 was ill and broken up over a love affair. Soon had boring pains in legs and since January, 1893, bad dreams. In July, 1897, got out of work and failed physically. Became quite depressed on account of financial difficulties. During September and October at times was quite depressed, and at others pleasant, though usually worse in the morning. October 18, 1897, saw a vision of himself jumping in the river, and that haunted and overpowered him so that he threw himself off the Bloomingdale bridge. Sudden impulse, though he admitted that he went out for that purpose. He was taken to City Hospital with Colles fracture. He continued to have bad nights and frequently cried and hated to see people. Early in June, 1898, lost his position because of slack work, and became discouraged and depressed, but before this was blithe and lively. August 6, felt very bad and did not eat; thought something was going to happen and cut throat with a razor and nearly succeeded in suiciding. Good recovery from City Hospital, and committed to Worcester Insane Hospital, August 17, 1898, as having suicidal impulses over which he had no control.

Physical condition on admission.—Pallid complexion. Left pupil reacts less to light than right. Knee-jerks absent. Slight tremor of hands at rest. Oxaluria. No Romberg. Gelatinous tremor of tongue.

Mental status, September 13, 1898. Quite anæmic. Bright facial expression and affable manner. Perfect orientation. No defect of intellect or memory. Knew perfectly well what he was doing when he jumped off bridge and cut himself. Explained these attempts at suicide on ground of having horrible thoughts, urging him to do so. Explanations sound like excuses. Talked to other patients as a student of the occult; slips into another personality at night and does things foreign to his nature. No speech defect or defect in writing. Able to carry on an intelligent conversation. No delusions or hallucinations elicited. Emotional sphere harmonious. He continued quiet and affable, a good worker in the dining room, and occupied with playing cards and reading. He had dreams which affected him during the day. By March, 1899, he had fair insight into his condition. At times had suicidal impulses and asked to be sent to observation ward. The knee-jerks continued absent and other physical signs the same. Escaped on September 16, 1898, and a few days later discharged as "Improved" at request of mother.

He seemed perfectly well at home. Worked a year and a half in the biscuit factory. Change of gait noticed at this time with numbness of feet. Work considered too hard and he left and has had no steady work since. Reported for local papers and worked at odd jobs. Unable to keep places because he became too confused and was not reliable. Feet became painful and swollen. During summer of 1902, worried and depressed over condition. Writing became tremulous. Suffered from indigestion, lost weight, exhilarating dreams and insomnia. Later peculiar ideas of compulsion. Thought State Mutual Building had a fascination for him and wanted to

jump off, and he feared that he would commit suicide. Recently failing memory is marked. Again committed to Worcester Insane Hospital for safety, December 19, 1902, because suicidal impulse became stronger.

On admission he was quiet and complained of feeling weak and run down, so he was placed in bed. He was very neurasthenic. Answered questions promptly and pertinently and presented a fairly normal attitude. After a few days in bed he was allowed to be up and dressed. He spoke freely of his condition and showed almost a slight exhilaration at times, became too hopeful. Occupied his time reading and working and took a great interest in his surroundings. *Orientation* was perfect and grasp upon surroundings perfect. *Memory* for recent events somewhat defective with a tendency to confuse dates and events; this he recognized. *Memory* for remote impressions good, no discrepancy of dates. *Intellect* shows some deterioration, and calculating ability defective. Unable to concentrate his attention.

Mental attitude showed a normal stream of thought. Subjective sensations of weakness and gastric disturbances. Compulsive ideas of fear of suicide. Insight fair into present and good for previous condition.

PHYSICAL EXAMINATION, DECEMBER 23, 1902.

About the same general condition as before. Complaints of tiring easily and of lightning pains in legs at times. Stomach out of order.

Pupils.—Right 4 mm., left 3 mm., central and regular. Right reacts slightly, left not at all to light, slight to accommodation, some to sympathetic stimulation.

Cutaneous sensibilities.—Touch and localization not impaired. Pain sense much diminished in band over both nipples, and absent on soles of feet. Temperature sense not diminished.

Reflexes.—Knee-jerks, knee-cap reflex, and Achilles absent on both sides after repeated attempts. Cremasteric absent on left, brisk on right. Abdominal, elbow, and forearm reflexes brisk. Plantars normal.

Motor functions.—Considerable fibrillary tremor of tongue, also of lips and hands. No paralysis. Slight incoordination of foot and hand movements. Gait unsteady; loses balance in turning corners. Swaying in Romberg. Speech shows considerable defect, slurring and hesitating in test sentences.

Radials and brachials thickened and tortuous, also temporal. No heart murmurs. No penile scar. Admitted syphilis. Writing showed no defect.

He improved somewhat, but at times complained of lightning pains in legs. There was no marked change till February 21, 1903, then he became upset by visit of mother and friends, cried during the visit and was much depressed, claimed the suicidal impulse was coming back. At night he was restless and tried doors to get out of the ward. On the morning of February 23d he was found standing in his room, staring blankly ahead, and paid no attention to questions. Easily moved about the room, but attention remained unattracted. Given a pencil and pad, took them slowly, but unable to write his name, appeared not to know their use. Arm remained in semi-flexed condition when pad was taken away and a few minutes later

arm dropped to his side. Put to bed and remained in same stuporous condition. Hands had to be restrained to prevent masturbation. He talked more, but only in a vague manner, and was unable to explain actions of the morning. He remained in bed, stupid and irresponsive. At times answered after much urging. Peculiar poses and mannerisms. Knee-jerks and Achilles persistently absent.

Cutaneous sensibilities.—Touch not determined. Does not attempt to localize. Pain apparently absent everywhere except over abdomen.

Pupils.—Right 4 mm., left 3 mm. No reaction to light.

Gelatinous tremor of tongue and lips. Marked speech defect. He claimed he had no stomach and refused food. Later became more talkative. Oriented for place, but not for time. Marked memory defect and no insight into episode. Claimed he saw snakes in bed and reacted to the same during the night. In mild delirium and confused. Subjective sensations: burning in back, and he called it fire. Developed fabrications based upon subjective sensations. Claimed some one shot him and shows physicians his chest with bullets in it. Still thought rattlesnakes were in bed with him. By March 4 he was brighter and answered questions pertinently, but with some hesitation. Claimed he had been poisoned. In a few days later, however, he was stupid and irresponsive as before and had vesical paralysis, necessitating catheterization for some days and which improved under urotropin and washing with boric acid. His condition became variable. At times talked freely and seemed brighter, but soon lapsed again into his old condition of stupor and restlessness with mutism and resistiveness.

On April 27 patient got out of restraint twice and attempted suicide both times. Amnesia for these attacks. During May he was stupid and at times noisy and excited. He died suddenly, June 5, 1903. Cardiac failure.

Autopsy four hours post mortem—Dr. T. A. Hoch.

Brain.—Weight 1260. Soft. Pia of convexity, slightly thickened and hazy. Vessels of pia injected and milky lines follow vessels. Slight œdema, atrophy of convolutions. Basal vessels atheromatous. Granulations seen in floor of 4th ventricle.

Heart.—Thickening of mitral ring.

Cord.—Clot on ventral surface of 4th and 5th cervical segments.

Microscopical examination.—*Brain.*—Cortex in frontal and parietal regions shows well-marked changes of general paralysis.

Cord.—Shaffer's method for medullated fibers. *In cervical region* only two narrow tracts of degeneration are seen, meeting in the ventral portion and branching out in V-shape, and Lissauer's tract has some degenerated fibers. Root zones and roots are free. *In thoracic region* the posterior root zones and entering roots show degeneration, also posterior root bundles are degenerated with some degeneration in lateral tract. The posterior columns show moderate degeneration, but some healthy fibers are seen. Lissauer's tract is only partially degenerated. Fibers around Clark's column show but little degeneration. *In lumbar region* posterior roots, root zones, and root bundles show marked degeneration and fibers around Clark's column moderately degenerated. The septo-marginal zone and ventral

posterior zone are free from degeneration. Lateral columns are also degenerated, but only slightly in thoracic, lumbar, and sacral segments.

Sacral segments.—The posterior roots, root zones, and root bundles show very little degeneration, but partially degenerated posterior columns with septo-marginal tracts and ventral posterior zone free. Lissauer's tract shows some degeneration.

Case VII.—*Tabetic paralysis in a man æt. 66. Syphilis not established. Demented type. Tabetic symptoms slight. Duration two years. Convulsions. Death and autopsy. Typical general paralytic changes in cortex. Posterior column degenerated in cord.*

C. W. McL. Aet. 66. Married. No occupation. Male.

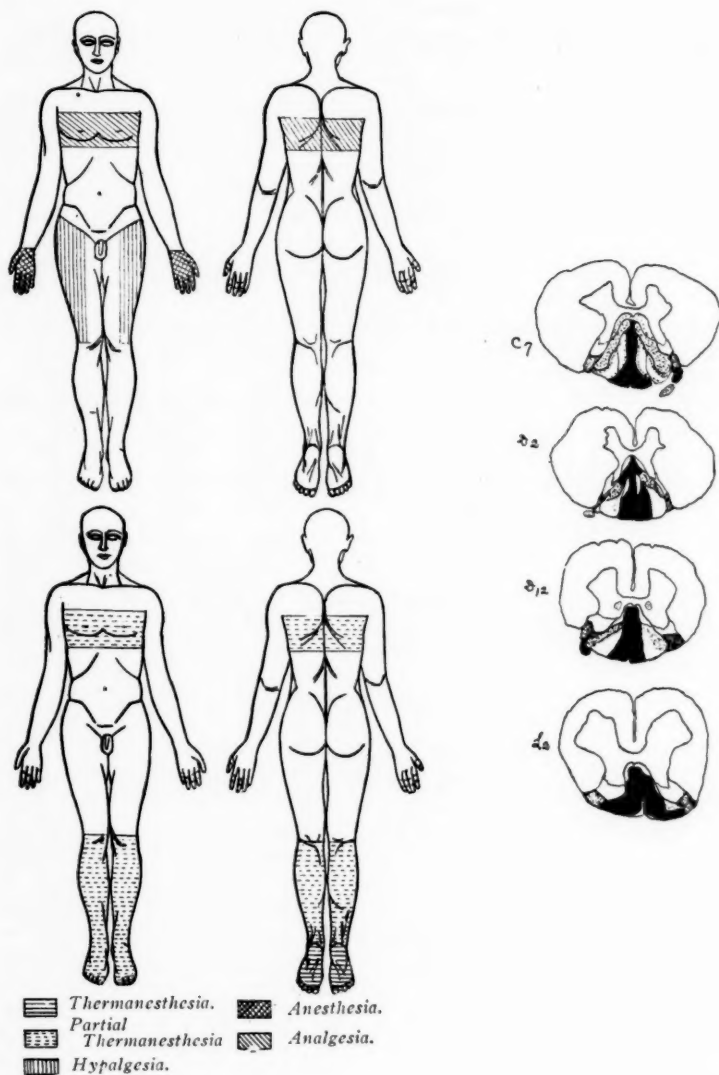
Family history reveals no heredity.

Personal history.—Early development normal as far as known. Married æt. 25 and wife has had no children. Patient admits gonorrhea, but denies syphilis. Patient was a successful road-house keeper and always supported wife. Marked alcoholic excesses for past 27 years, and he was frequently drunk. Nothing further could be learned, as patient is too demented to give any account of his life.

Onset of the psychosis.—Gradual about April 1, 1901. He suddenly left work to go to another town. He was fifteen hours going a distance of six miles, and he failed to recognize members of his own family. He went back to work, but was only able to work for his board, as he was incapable of remembering things and unable to perform work he had done formerly. He would sit by himself all day and seemed very stupid. He did not know what he was doing and could hardly recognize anyone. He would wander away and get lost frequently. On June 14 he picked up his clothes, put them in a bundle and walked out, going about three miles. He acted peculiarly on the road, dodging everyone, and claimed some one had killed his wife. He was later found on a lumber pile in a most dejected attitude and asked for some poison to kill himself. He was taken to the Poor Farm and committed to the Worcester Insane Hospital, June 15, 1901.

On admission he was found to be completely disoriented and lost as to his surroundings. He was quiet and orderly, but unable to find his way about the ward. He was quite contented and usually had a smiling, simple facial expression. On June 29 he was struck by another patient and was put to bed, where he remained because of general weakness. He answered questions promptly and pertinently, but often gave silly and unintelligent replies, showing an utter lack of appreciation of his surroundings. The stream of thought was interrupted and wandering, often of a childish, inconsequential trend. There was slight exhilaration and expansiveness. No marked delusions or hallucinations elicited. Marked deterioration of intellect and memory, the lapse in memory being filled with fabrications and reiterations of the past. Unable to retain things in his memory. Completely disoriented for time, place, and persons. Some little insight into his loss of memory, but none into true mental condition. He remained in above condition for some time.





NOTE.—Charts made from examination, December 9, 1902.

Case VIII.

PHYSICAL EXAMINATION.—An old, feeble, fairly nourished American with gray hair and moustache and general senile aspect. General feeling of well-being and exhilaration and no subjective sensations. No pain over nerve trunks or muscles.

Eyes.—Beginning arcus senilis. Pupils unequal and much contracted. Left $3\frac{1}{2}$ mm., right 2 mm., and irregular. Both central. Right pupil shows no appreciable reaction to light and only slight to accommodation. Left pupil reacts sluggishly to same.

Vision.—Poor, but no hemianopsia.

Cutaneous sensibilities.—Normal as far as ascertained, as patient was too demented to co-operate and quite deaf. Unable to hear watch tick unless held close to ear. Taste and smell somewhat impaired, but difficult to ascertain.

Reflexes.—Knee-jerks, Achilles, and knee-cap reflexes absent on both sides. No ankle clonus. Plantars and abdominal reflexes normal. Cremasteric normal. Elbow and forearm reflexes normal.

Motor functions.—Coarse tremor of tongue and hands. Slight incoordination of foot and hand movements. Gait very unsteady, feeble and tottering, losing balance easily. Some swaying in Romberg.

Speech.—Shows characteristic slurring in test sentences and in ordinary conversation.

Writing.—Very poor and had some tremor.

Lungs.—Negative.

Radials and brachials tortuous and thickened. Temporals stand out hard. Heart not enlarged and no murmurs can be detected.

Sexual organs are normal and no scar visible. Patient claimed he had been impotent for a good many years. Admitted one gonorrhea, but denied syphilis. Statements not reliable.

Urine negative.

There was very little change in patient's condition. He remained in bed, growing more demented, and did not know his own wife. He would scratch his legs, claiming they were not his, but made no suicidal attempts. There was no change in reflexes or reaction of eyes, except that the pupils became smaller ($1\frac{1}{2}$ -2 mm.) and less reaction to light till February, 1903, when it is recorded: "Pupils pin-point in size and no reaction to light." He became much demented and filthy in habits. He became worse about the 7th of March, 1903, and on the 9th he had a slight epileptiform seizure, but no paralysis. He died later in the day of hypostatic pneumonia.

Autopsy 11 hours after death.

The summary of the findings was general arterio-sclerosis and atheroma of aorta. Mitral and aortic valves thickened. Hypostatic pneumonia.

Brain.—Weight 1290 grms. Dura strongly adherent to skull-cap. Substance fairly firm, except over frontal poles, which are soft. Pia everywhere hazy. Milky white lines along course of vessels and deeply injected, more so on right, and whole vertex being very cedematous. Considerable asymmetry of convolutions on either side, more marked over vertex. The

convolution of frontal region flat and atrophic, extending back to percentral fissure. Sulci shallow and narrow. Basal vessels distended and stand open. Cisterna hazy. Temporals adherent and cannot be raised without considerable tearing. Granulations made out in 4th ventricle.

Cord showed very little macroscopically except a thickening of the pia.

Microscopical examination.—Cortex shows typical changes of general paralysis.

Cord.—Weigert Pal method.

Sections studied, 7th cervical, 2d and 11th thoracic, 2d lumbar. The posterior roots are partially degenerated in 7th cervical, completely degenerated in the thoracic 2d, partially in the thoracic 11th; 2d lumbar they are completely degenerated. Lissauer's tract is degenerated in all segments.

The *exogenous system* degeneration does not differ from that found in Cases I and II, and is more marked than is seen in cases of this group. The fiber plexus in Clark's column is but little affected in the 2d thoracic, but lower down there is considerable degeneration. The *endogenous systems* are slightly degenerated and this case shows marked ataxia.

Case VIII.—*General paralysis preceded by tabes for two years. Primary optic atrophy both eyes. Cutaneous sensibilities involved slightly. Demented form. Syphilis not excluded. Lightning pains in legs. Duration 3¼ years. Died of heart failure. Autopsy. Characteristic changes of general paralysis in brain. Posterior column degeneration in cord.*

J. M. M. Aet. 50. Single. Janitor. Male.

Family history negative as far as known.

Personal history.—Born in Boston. Very little known of early life, as no one came to give competent history. Worked as a carpenter till 1894 and since then he had been a janitor and secretary for some Odd Fellow's lodge. Considered a steady worker and earned good pay. No alcoholism, but smoked excessively. No statements as to venereal disease could be obtained (as he was too demented to answer satisfactorily), but syphilis was denied. He was a bright, pleasant man and considered moral by friends. He never had any serious illness or traumatism and not till 1898 did he notice anything wrong. Then he lost the sense of smell (could not detect skunk). In 1900 *locomotor ataxia* developed and he had great difficulty in walking and was unable to ride his bicycle. This condition progressed gradually till he could hardly stand. He consulted a physician and systematic exercise benefitted him very much. In 1901 his eyesight began to fail, the right was affected first, then the left.

Onset of the psychosis.—Nothing peculiar was noticed about patient till January, 1902, when gradually his friends noticed a change of character and commented upon the fact that his mind was failing. He did not realize the seriousness of his trouble and thought he would soon be well. He was very talkative and showed a general feeling of well-being. Gradually it was noticed that his memory was failing, especially for recent impressions. His sight had become so that he could not see anything but light and was not able to walk without assistance. On December 1, 1902, he was much

upset over some lodge affairs and after that his condition became much worse. He talked to himself a good deal and pleaded with imaginary people. Suddenly, December 3, he became much excited, shaking and trembling all over. He begged his landlady to kill him and they could do nothing with him. He attempted to get his razor. After some difficulty he was subdued and sent to Deer Island and from there he was committed to the Worcester Insane Hospital, December 8, 1902.

On admission he was much excited and very talkative. He was rambling and flighty in his talk and told of his grievances in a disconnected manner. Although blind, he insisted that he saw quite well and was in good physical health. He slept very little and it was necessary to put him in restraint at night. The day after admission he was quieter. Claimed he could see when he came there, but he had been made blind. When questioned he answered promptly and pertinently, and showed much prolixity and a tendency to repetition. He was emotional at times, but mood would change suddenly. It was necessary to keep him in bed, as he could walk only with difficulty and was totally blind. Orientation was fair for place and persons, but not for time. He had a fair grasp upon his surroundings. His memory for recent events was much impaired. He showed an inability to retain impressions, while for remote events it was good except for exact dates, and here he showed characteristic discrepancies. General intellect showed much deterioration and he had no real insight into his condition. He had many neurasthenic ideas, often absurd, such as he was dead and could not move. At times emotional, irritable, and violent. At times attempts at self-injury and shamming. No prominent delusions elicited, but at times was somewhat expansive in his fabrications.

PHYSICAL EXAMINATION, DECEMBER 9, 1902.

Well-developed American. Numerous pigmented depressed scars under both scapulæ. Bruises and pigmented areas over both tibia, which are roughened. No enlarged glands, but two granular subcutaneous masses found on left forearm and left thigh. He complained of previous pains in legs, lightning in character, and of numb feelings in fingers and toes. At times girdle sensation around chest and dizzy feeling in head.

Eyes.—Slight nystagmus in horizontal planes. Movements of right limited in looking to extreme left. Both eyes converge when looking upward. Marked suffusion of conjunctiva in left eye. Pupils unequal (right 6 mm., left 5 mm.), central and regular. Immobile to light, accommodation, and sympathetic stimulation. Vision completely lost in right, only distinguishes light in left eye.

Ophthalmoscopic examination.—Discs of both eyes show a pearly grey color and are cupped out. The vessels are large and dip over ring. Primary optic atrophy of both discs.

Smell impaired and had been for several years.

Taste unimpaired.

Cutaneous sensibilities.—Touch and localization everywhere normal, except palms of both hands. Pain sense absent in a girdle over chest, above and below nipple, also extending over back. Diminished pain on outer side

of thighs. Temperature sense diminished over body and legs, and absent on soles of feet. (Did not co-operate very well.)

Reflexes.—Knee-jerks, Achilles, and knee-cap reflexes absent. Plantars normal. Cremasteric brisk on left, sluggish on right. Elbow and forearm reflexes sluggish.

Motor functions.—Tremor of tongue and hands, especially of right hand. Some twitching of right arm. At times muscular power of extremities not impaired. Slight incoordination of hand movements, but more marked in legs. Gait very ataxic and unsteady. Marked swaying in Romberg position. Unable to stand on one foot. Speech showed marked defect in test sentences.

Heart and vessels.—Considerable degree of arterio-sclerosis. No dilatation and no murmurs. No penile scar and syphilis denied. Admits gonorrhea three times.

Urine negative.

PROGRESS.—Patient became gradually more demented. At times he was much depressed and suicidal and was always irritable, excited, and noisy most of the time. Many absurd somatic ideas—lost all his teeth and mouth sewed up. Many expansive ideas, alternating with hypochondriacal ideas, both forms very absurd. He was constantly in restraint because of restlessness and sudden violent impulses. The physical condition did not change. The knee-jerks were persistently absent and the cutaneous sensibilities were the same upon frequent examination, though he did not co-operate very well. He became dull and stupid and showed symptoms of heart failure.

Died March 10, 1903, of heart failure.

Autopsy 2¼ hours after death.

The anatomical summary was as follows:

Heart flabby and considerably enlarged. Considerable thickening of mitral valves. Aortic valves and beginning aorta much thickening, also coronaries. Other organs not especially abnormal.

Brain.—Weight 1440. Considerable pial œdema over frontal and parietal regions and 140 cc. cerebro-spinal fluid withdrawn by lumbar puncture. Dura slightly adherent over frontal and occipital regions. Pial vessels deeply injected. Pia hazy over vertex and milky line follows course of vessels. Frontal lobes adherent just above corpus callosum. Convolution fairly firm. Temporal lobes separated from frontal with great difficulty. Pia thickened along Sylvian fissure. Basal vessels slightly thickened. Cisterna thickened and hazy. Distinct granulations in 4th ventricle.

Cord.—Dura adherent and pia injected. Posterior column of cord in all regions shows a macroscopic change, but it is more marked in lumbar region and less in cervical. The posterior columns are pearly gray and translucent.

Microscopical examination of brain.—General paralysis changes present, but not far advanced.

Cord.—Weigert Pal method.

Sections examined, 7th cervical, 2d and 12th thoracic, 2d lumbar.

Posterior roots partially degenerated in the 7th cervical and 2d thoracic, but totally degenerated in the other segments examined. Lissauer's tract shows considerable degeneration throughout. The degeneration of fiber plexus in Clark's column is well marked. The ventral posterior zone is but little affected, but other endogenous systems show some degeneration, especially in the comma tract. Thoracic 2d and 12th, the degeneration is more marked on one side than on the other. This case represents well-advanced tabetic process with marked ataxia. The exogenous systems are markedly degenerated.

Case IX.—*Tabetic paralysis. Syphilis probable. Headaches and shock at onset. Convulsions. Delusions of persecution. Later transitory shock affecting right side and transitory aphasia. Cutaneous sensibilities slight. Marked ataxia. Improvement and escape.*

A. A. B. Married. Aet. 31. Electrician. Male.

Family history.—Mother insane 18 years ago. Grandfather alcoholic. Otherwise negative.

Personal history.—Patient was born in Maine, 1872, and his early development was essentially normal. He attended school, but did not care much about studying. He took up electrical engineering and was fairly successful. Patient was married æt. 23 and his wife has had four children. Patient admits one gonorrhea in 1895 and claims later to have taken K. I. for a good many months. The examining physician gave tertiary syphilis as the cause of trouble. Patient had always been pleasant and sociable and was considered a moderate drinker for eight years. Occasionally he would get drunk.

Onset of the psychosis.—Gradual since October 1, 1902. Patient began to complain of frequent frontal headaches, which were quite severe, and he has suffered from constipation. He got along all right with his work until recently. About January 20, patient complained of right leg being numb and about noon he claimed that right side was completely paralyzed and he could not talk for some time. He was able to walk with assistance. However, he was unable to work and went to bed off and on until he was committed. He complained of an electric motor at the base of the brain and talked about being a negative wire. He became easily annoyed when he had the headaches and anything like dogs barking would make him furious, and he scared his wife. He would lose control of himself entirely. He had a good appetite, but his sleep was interfered with by these headaches. He became violent and was considered dangerous, so he was committed to the Worcester Insane Hospital, January 29, 1903.

On admission he was quiet and orderly and complained of neuralgia on left side of face, numbness of right side of body and tongue, and had been so for a week. He thought some powders he had taken for headache had poisoned him. His gait was slow and uncertain and Achilles and knee-jerks were found to be absent and pupils dilated.

PHYSICAL EXAMINATION, JANUARY 30, 1903.

A well-developed, well-nourished man, somewhat anæmic. Some en-

larged glands found in groin. Complained of persistent headache of left side of head for two weeks, worse at night. Numbness of entire right leg and pricking sensation at times and same sensations of right arm, hand and face and tongue. These sensations gradually left the arm, but still in leg, also a little dizziness at these times. No pain over nerve trunks.

Eyes.—Slight nystagmus in extreme right and left lateral plane. Pupils central, left regular, right somewhat irregular, on inner quadrant, unequal (right 5 mm., left $6\frac{1}{2}$ mm.). Fairly prompt reaction to light, but within very narrow limits. Prompt to accommodation, slight to sympathetic stimulation. Vision not impaired. No hemianopsia or diplopia. Hearing and taste normal. Smell slightly impaired on left.

Cutaneous sensibilities.—No anæsthesia to touch, but slightly diminished on bottom of left foot. Pain sense normal everywhere. Temperature sense slightly diminished on soles of both feet, more so on right.

Reflexes.—Knee-jerks, Achilles, and knee-cap reflexes absent. Plantars, slight flexion on right. Brisk extension of big toe on left. Cremasteric slight on left, brisk in right. Abdominal brisk. Elbow and forearm reflexes brisk. Organic reflexes normal.

Motor functions.—Fibrillary tremor of tongue and slight tremor of hands on rotation. Grasp fair, a trifle weaker on the right. Muscular power of extremities not impaired. Some incoordination of foot and hand movements, more marked on right. Gait considerably ataxic and unsteady. In Romberg position patient falls backward each time. Writing shows slight defect and tremor. Speech—some defect noticed in test sentences.

Lungs.—Negative. Brachials thickened, but not tortuous. Temporals tortuous. Pulse fast and regular, 114 standing. Heart negative.

Abdomen negative. Patient admits gonorrhea seven years ago, denied syphilis, but admitted taking K. I. for a long time. No scar on penis.

Urine.—Negative.

Patient remained quiet and orderly, answering questions intelligently and complaining of headaches on left side of head. He was agreeable and sociable, playing cards and reading, showing a nearly normal reaction. He was given sat. solution K. I. and mercurial inunctions, which seemed to benefit him, also migraine tablets for headache. Mentally he seemed quite clear. Was well orientated for time, place, and persons, and showed a good grasp upon his surroundings. There was no defect of memory or intellect, but he had no insight into his condition, either at home or at the hospital. He expressed no delusions, but claimed he heard dogs barking and people made noises upstairs that annoyed him. He claimed he had received an electric shock that caused the shock on right side of body. He remained practically the same, showing some improvement in physical condition until February 20, when he had a shock during the night, but it was transitory and only affected the right side slightly. At first when seen he could not talk, but understood all that was said to him. Later, when seen by physician, he could talk with great difficulty and could only walk with help.

Reflexes.—Knee-jerks, Achilles, and knee-cap reflexes continue absent

on both sides. Plantars: Flexion of small toes and slight extension of big toe, but flexion is soon exhausted. Cremasteric and abdominal absent on right, brisk on left. Elbow reflexes absent and forearm reflexes slight.

Eyes.—Pupils unequal (right $4\frac{1}{2}$ mm., left 6 mm.). Both react fairly prompt to light, but within narrow limits, and soon expand even with brilliant light shining on them. Muscular movements unaffected.

Vision.—No hemianopsia, but slight degree of diplopia in looking to left and downward.

Cutaneous sensibilities.—Touch and localization not impaired, though at times unable to tell direction of stroking in right nipple area. Pain sense not lost anywhere, though somewhat diminished over nipples, where he does not flinch and cannot differentiate pencil and needle prick. Temperature sense not impaired.

Motor functions.—Slight right facial paralysis. Tongue median with very little tremor. Marked incoordination of foot and hand movements. Grasp good on left, weak on right, also decrease of power in right leg. Sense of position not lost. Stereognostic sense intact.

Gait.—Unsteady and staggering, especially weak on right side. Much swaying in Romberg.

Speech.—Marked defect, thick and stumbling, and much hesitation in pronouncing. Very slight degree of aphasia of paraphasic type. He complained of numbness of right leg and bottom of foot, and severe headaches on left side since last night. He was stupid and confused, but oriented.

February 21. This morning patient was found completely paralyzed on right side (arms, legs, and face), though tongue is median, unable to eat or chew as food runs out of mouth. He was hardly able to talk, but no true aphasia. Unable to walk and very emotional.

Physical.—Knee-jerks, Achilles, and knee-cap reflexes absent. Plantars: brisk Babinsky on right and some extension on left. Cremasteric brisk on left, slight on right. Abdominal brisk on left, absent on right. Right leg can be slightly extended.

Hearing is somewhat impaired. Pupils show no change. Vision unimpaired. No diplopia.

Cutaneous sensibilities unimpaired upon repeated examinations.

Patient remained about the same for four days, when he began to improve and some power returned to right side. Cutaneous sensibilities tested every day and no impairment found. At times he complained of numbness in ring and little finger, and extending up arm. His bladder was not affected, but bowels moved only by enema. Speech improved gradually.

He improved slowly, till the 2d of March, when he apparently had another slight shock. He became weak, had headache on left, and was unable to move right side. Facial paralysis was more marked and he had great difficulty in talking.

March 6. Found in deep sleep from which he could not be aroused. Very stupid. Breath offensive. Reflexes the same. Babinsky on right. The next day he developed fever of 102° and was more stupid and sleepy, and complained of some sore throat.

From this time he gradually improved, both mentally and physically. Pupils continued left larger than right. Sluggish reaction. Cutaneous sensibilities at no time impaired. Slight residuals of right hemiplegia, but power gradually returning. He became quite clear, but memory somewhat deteriorated. He frequently became emotional and irritable, fabricating about the medicine and making trouble. By April 4 he was up and dressed and able to walk, though slight residuals. At times complained of numbness of right leg and that it was more sensitive to pin pricks than left. He had a few ideas that his wife was not treating him exactly right, and he had a very exalted opinion of his own powers and ability, trying to play tennis and writing for positions.

Later patient escaped.

A letter from his wife, dated July 30, 1904, in answer to an inquiry, stated that he "seemed like his old self," and was doing the same work he did before the onset of his trouble, but had some difficulty in walking up and down stairs, also that his mind seemed as active as it ever was.

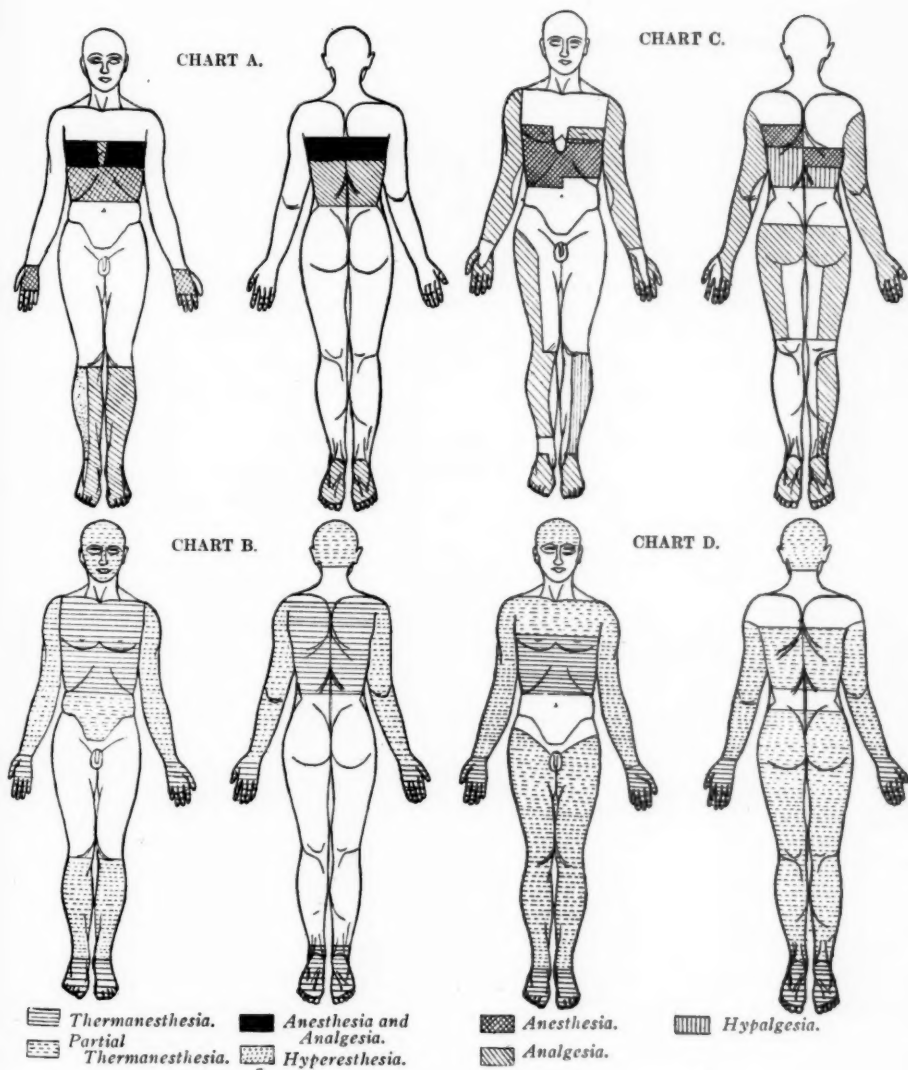
Case X.—*Tabetic paralysis. Atypical course. Long duration. Marked remission. Syphilis. Lightning pains. Peculiar mental symptoms. Slight deterioration. Variable sensory disturbances.*

R. M. Aet. 39. Married. Teacher. Male.

Family history reveals marked heredity. Father, sister, cousin, and niece insane, but form unknown. Early development normal. Good education. Taught school for three years, then studied for ministry. Syphilis at æt. 18. Married æt. 27. Wife had four children and three miscarriages. He never drank to excess. In 1890, psychosis apparently began with irritability, unhappy married life, frequent quarrels. In 1896, further irritability and violence to wife with increased interest in religious matters. In 1897 he left his home and was arrested for non-support, and returned to wife, but was violent. March, 1898, separation began. November, 1898, homicidal acts, excited, swearing, yelling, and talking religion. Committed to Worcester Insane Hospital, November 5, 1898.

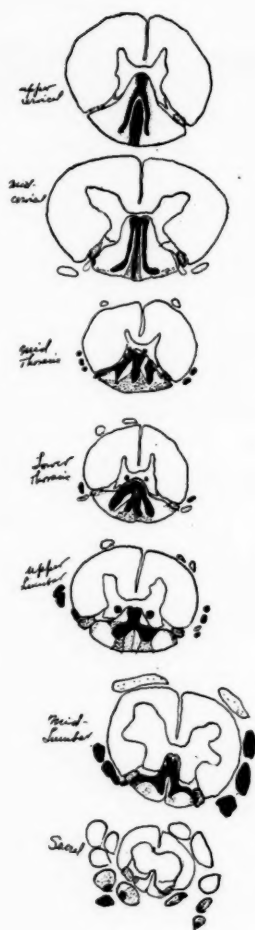
On admission in restraint, yelling, spitting at attendants. He was disoriented, called patient "Jesus," later "Virgin Mary." November 11, religious, becoming excited at times, gesticulating, emotional, incoherent, violent outbreaks. He was defiant at other times, pressing physician for discharge. He was well oriented, with a vague insight, admitting confused ideas, but denied being insane. No definite hallucinations elicited. No deterioration of intellect or memory apparent. Some emotionalism and religious content of talk exaggerated. Physically he presented absent knee-jerks, elbow- and wrist-jerks. Considerable swaying in Romberg. Gelatinous tremor of tongue. Coarse tremor of hands. Left pupil slightly larger than right, both reacting promptly. Oxaluria. Penile scar and admits syphilis.

After January 17, 1899, patient became quiet and orderly, reacting in a normal manner on the wards. He occupied himself with the ward work



NOTE.—Charts A and B were made from examination, November 30, 1900. Charts C and D were made from examination, January 28, 1902.

Case X.



and amused himself by reading and playing cards. This continued until he was discharged, July 24, 1899, at request of wife, as "Much improved."

He was readmitted six months later.

On admission he was placid but mute, refusing to talk, and when questioned crossed himself and said nothing. He would kneel and pray when town clock struck the hour. That night he masturbated and in the morning spoke to attendants for the first time. Later when tray came in he imitated animals, crowing like a rooster when he saw an egg. He became actively resistive and noisy later, finally quieting down. He attempted to masturbate a second time. There were sudden changes from excitement to calmness. Threatening suicide. These periods of shouting and peculiar actions alternated with absolute mutism. He would suddenly burst out laughing and clap his hands varying strokes as if playing a tune. He became much quieter and on August 20 he reacted to questions promptly and pertinently, at times showing marked emotionalism. He was perfectly oriented and memory was unimpaired at this time, except for events since admission, denying peculiar actions, etc. No hallucinations elicited, but exhibits definite delusions of persecution by wife and vague delusions of poisoning. He reacts to self-accusation, crying out that he has sinned and praying for forgiveness. His calculations showed some defect, though he made very little effort. There was no retardation.

Physically.—Patient complains of lightning pains over right buttock extending down leg and often pains on top of left foot. Slight œdema of both ankles and feet.

Pupils.—Central and equal. Contracted 3 mm. React promptly to light and accommodation. Myopia corrected by glasses.

Cutaneous sensibilities.—*Prompt and accurate for touch and localization. Pain sense good except outer surface of thighs, ankle, and feet, which are not accurate. Heat and cold sense normal.*

Motor functions.—Slight fibrillary tremor of tongue. Considerable tremor of hands at rest and on rotation. Considerable swaying in Romberg position. Gait steady but with outward swing of left foot (amputated toe).

Reflexes.—Knee-jerks and Achilles absent. Elbow and wrist-jerks equal, but moderate. Abdominal and cremasteric equal and brisk. Plantars normal. There is also a slight systolic murmur heard best at apex and second pulmonic is accentuated.

There was little change in his mental condition until three months later, when he became quiet and a good worker and reacted in a normal manner to his surroundings. September, 1900, patient had an attack of hyperpyrexia lasting three days with temperature reaching 106° and with no apparent cause. The blood examination showed a leucocytosis of 19,353. In April, 1901, patient was put to work with gardner and given parole, and he has been working steadily ever since, showing no marked peculiarities.

PHYSICAL EXAMINATION, NOVEMBER 30, 1900.

No change except that pupils are unequal; right 4 mm., left 5 mm. Both react to light sluggishly. No consensual reaction in left, slight in right pupil. No reaction of either to sympathetic stimulation.

Cutaneous sensibilities.—Touch and localization good everywhere, except for area over chest from costal margin to 6 cm. above nipple line, but touch is retained over central area, covering sternum. Touch is lost on palm of each hand. There is also a girdle on back corresponding to girdle over chest of total anæsthesia. Analgesia shown in girdle over chest and back 12 cm. in width. On back analgesia extends down to small of back. The inner half of right lower leg and top of foot extending out to third toe. On outer side of same leg, hyperæsthesia marked, also top of left foot from outer side to third toe. The rest of left leg analgesic to pain, also both soles of feet.

Temperature disturbance shows absence over chest, anteriorly and posteriorly from neck to costal margins and palms and back of hands and feet from ankle down *much diminished*, face, back of head, both aspects of arms, anterior aspect of legs, and abdomen to pubes.

Cutaneous sensibilities.—January 25, 1901. Other physical and mental symptoms unchanged. Touch and localization around each nipple, extending down to costal margin. Central area over sternum unaffected. When touched below nipple in this area patient feels a tickling sensation in axilla on side touched, and surprised when told he was not touched in axilla.

Analgesia.—None found except for area around left nipple.

Temperature sense.—Much diminished for heat and cold and retarded over whole body except for area over abdomen from costal margin to pubes, where it is normal. Posteriorly everywhere, except in small of back a small band of normal sense is found. Total analgesia—one arm, left nipple, and another on sole of left foot.

Cutaneous sensibilities.—January 28, 1902.

Touch and localization.—Absent on chest, rather irregular and fat on back asymmetrical.

Pain sense absent both arms ant. and post. except for a small area around left nipple. Fingers of right hand and left hand except first joint of middle finger. The outer side of right, and whole of right leg except inner surface; left leg much diminished on outer half, normal area on inner side of both ankles and whole of right ankle. Top of both feet absent pain. Posteriorly, absence of pain on arms except at elbow. Back of right hand and left hand except thumb, first finger and first joint of second finger. Both buttocks and outer side of both thighs, outer side of right leg and sole of both feet.

Temperature sense.—Absent on chest just above nipple to costal margin, palm and back of each hand, and feet from ankle down. Diminished elsewhere except abdomen from costal margin to pubes and area on small of back.

There has been no marked change in patient since he has been working with the farmer.

The cutaneous sensibilities examined March 3, 1902, show some changes. The areas of anæsthesia to touch over chest were the same, but it was symmetrical over back. Arms showed no analgesia, but areas on hands

and legs were about the same. The areas of thermanæsthesia were but little changed except over chest, where the areas were asymmetrical and one patch being considerably lower than the other. After this frequent examinations were made and always showed some minor variations and patient was in good condition to co-operate. He is still about the same and working on the farm, only showing the physical signs as formerly.

Case XI.—*Tabes and general paralysis. Syphilis. Tabes precedes general paralysis by five years. Duration four months. Galloping type—grandiose and excited. Death and Autopsy. Characteristic changes of general paralysis in cortex and typical tabetic degeneration in posterior columns.*

L. B. Aet. 45. Salesman. Married. Under the care of Dr. H. W. Mitchell.

Family history.—Negative.

Personal history.—Good business ability and owner of shirt company. Gave it up on account of excessive drinking. Alcoholic excesses for many years up to five years ago. Admits chancre on lip fifteen years ago. Treated by mercurials; no secondaries. Locomotor ataxia for five years, with lancinating pains in legs, unsteady gait, often fell on the street. Treated by Christian Science and claims he promptly recovered (?).

Onset of psychosis.—Three weeks before admission. Talkative in expansive way and irritable. He made various plans and had idea he was to be president of bank. Bought useless articles for house; also stock to give away to friends. Boastful and euphoric. Memory seemed good. Slight speech defect. Never had convulsions and no disturbance of gait. Admitted to McLean Hospital, June 26, 1903. There he was active, writing business letters, sending telegrams, boasting of large stores he is to erect. No insight; says he is perfectly well. Memory good. In conversation speech defect noticed, but test sentences given well.

Physical examination.—Pupils unequal. Stiff to light, prompt to accommodation. Tongue protruded to right. No tremor of hands. Slight unsteadiness in gait. Romberg sign absent. Knee-jerks absent. (No tests for cutaneous sensibilities made.) He was transferred to Danvers Insane Hospital, July 11, 1903, and his general condition was much the same as at McLean Hospital, actively engaged in writing letters, offering to buy property, engaging men at fabulous salaries, and offering to cure other patients by Christian Science. Markedly euphoric and expansive. Well oriented for time, place, and persons. Memory fair; able to give a consistent history of his life, but mixes and confuses dates. Made many contradictory statements that he fails to recognize. Marked pressure of activity. Rambling stream of thought. Rapid transition from one subject to another. No hallucinations, and delusions are mainly expansive in character, continually changing and very absurd. Marked emotional excitability.

Physically.—Slight Romberg symptom. Facial lines obliterated. No pronounced tremor or ataxia, but unable to walk crack in floor. No motor paralysis. Pupils irregular—right larger than left which is of normal size. Very slight direct light reflex and no consensual. Knee-jerks and Achilles

persistently absent. Other reflexes present. Both superficial and deep. Sensations: None found by coarse tests and patient's euphoric condition made tests unsatisfactory. Speech defective, trips and slurs test sentences. Writing not impaired.

He became rapidly worse, more expansive and irritable, constantly active, until August 15. Developed septic leg and elbow joint and died September 1, 1903, of septicæmia.

Autopsy 12 hours post portem, by Dr. A. M. Barrett.

SUMMARY.—General enlargement of superficial, mesenteric, retroperitoneal lymph nodes. Pulmonary œdema. Sepsis right leg.

Brain.—Pia œdematous and cloudy. Slight atheroma of basal vessels.

Cord.—After hardening for two weeks, found the arachnoid of lower thoracic and upper lumbar regions were a number of small bony plates. Section showed degeneration of posterior columns macroscopically.

Brain examined after five months' hardening in 10 per cent formalin, shows nothing except pia thick and tough. Convolutions are smooth and show no atrophies. 4th ventricle scaly, but not granular.

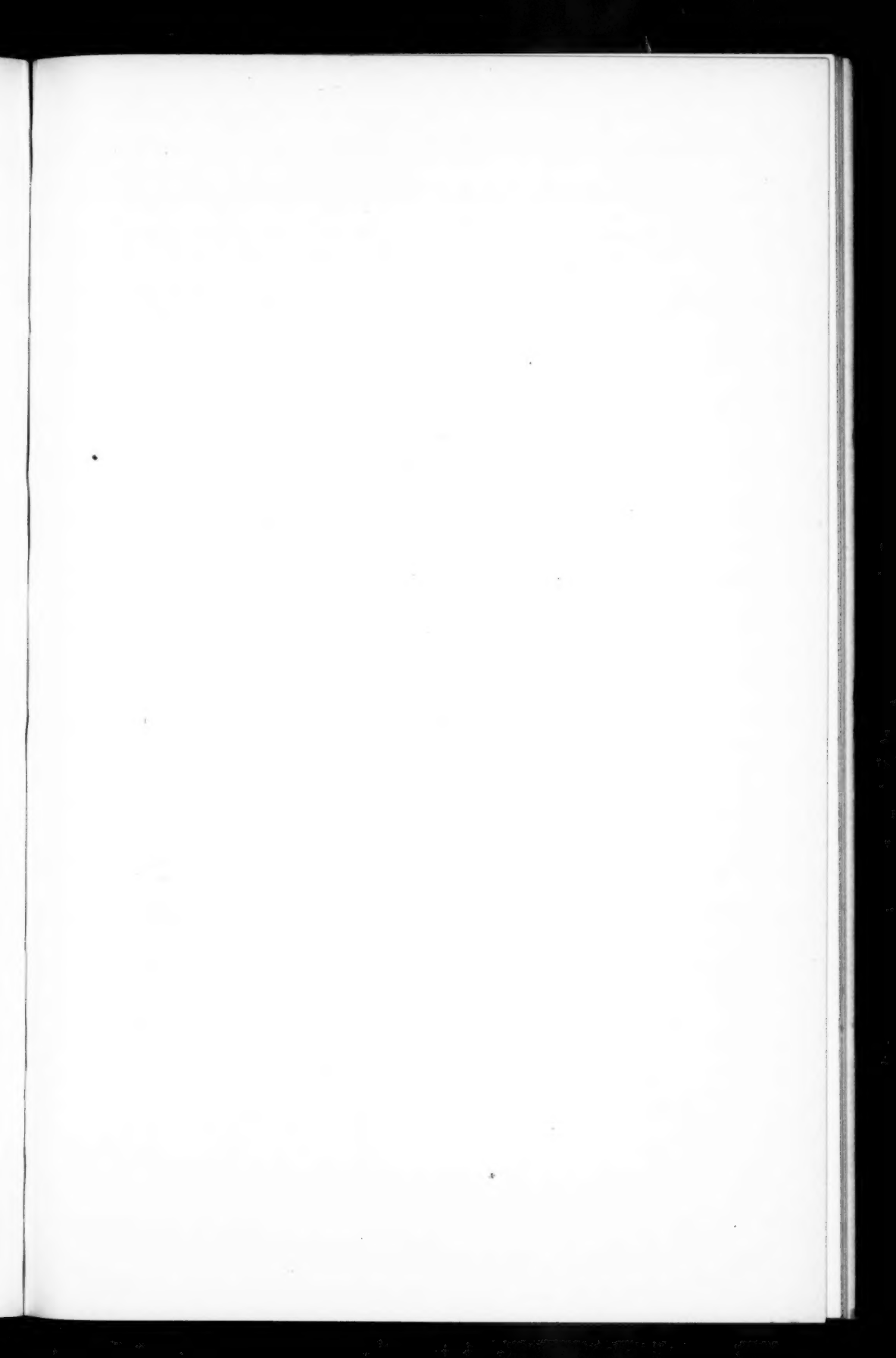
Brain.—Nissl method.

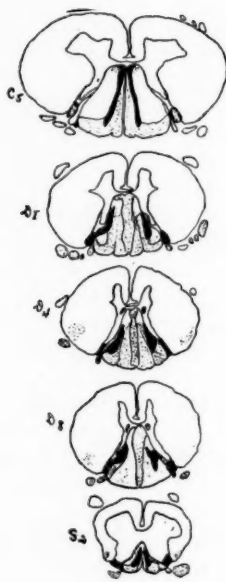
In frontal regions very early changes of general paralysis are seen. The superficial layer shows a great increase in the neuroglia. The blood-vessel changes are slight in some cases, amounting only to a swelling and thickening, but others show some plasma cells in the infiltrate. Everywhere among the nerve cells there is a hyperplasia of neuroglia elements. The nerve cells are shrunken and stain poorly, while others show only a faint staining of nucleus. Destruction of cells is very marked. Many small new-forming blood-vessels are seen. In paracentral regions the changes are more marked, especially changes in blood-vessels, but still more advanced changes are seen in the 1st temporal. Calcarines show some changes of blood-vessels. Altogether we have a picture of early changes characteristic of general paralysis.

Spinal cord.—Section stained by Shaffer's method.

There is some degeneration of Lissauer's tract throughout all the segments, except in the sacral region, where healthy fibers are found. The entering posterior roots are not degenerated in upper and mid-cervical regions, but in thoracic and lumbar regions there is almost complete degeneration, although in sacral region it is not so marked. Posterior root bundles show corresponding degeneration. The plexus of fibers around Clark's column are degenerated throughout that column. The root zones are degenerated throughout the thoracic and lumbar regions. The exogenous system of fibers show the usual degeneration, while the endogenous fibers are intact. The degeneration is most advanced in the lumbar and middle and lower thoracic segments.

The degeneration follows the typical tabetic changes, but is not so marked as in some cases, although the duration of tabetic process was five years.





Case XII.—*Tabetic general paralysis. Exaggerated knee-jerks. Epileptiform convulsions. Pupillary disturbances. Expansive-demented type. Muscular atrophy and contractures. Syphilis in husband. Duration one year. Death from septicæmia. Autopsy. Well-marked changes of general paralysis in cortex and typical posterior column degeneration in cord. Slight lateral column degeneration.*

J. M. D. Female. Married. Aet. 41. Housewife. Under care of Dr. E. E. Bessey.

Family history.—Nothing known.

Personal history.—Early development normal. Ordinary mental capacity. Good education. Married æt. 31. One child six years after marriage, and no miscarriages known of. Menstruation regular until one year ago. Never used alcohol or drugs. Husband admits syphilis when a young man, for which he was treated and supposed that he was cured. Could give no symptoms of syphilis in wife.

Onset of psychosis.—Gradual for one year. Became forgetful and unable to do her housework. Suspicious of husband, irritable, and soon developed expansive delusions. Claimed she had large amounts of money in the banks. Talked of the houses and land that she owned. Gradually became worse, and husband had to lock the doors to keep her from wandering about the streets; grew weaker and took less interest in her surroundings. Several epileptiform seizures at onset of trouble, loss of consciousness for several hours accompanied by convulsive movements of the muscles, stupor and confused for several days, and these seizures have occurred at irregular intervals, the last about one month ago. Committed to Danvers Insane Hospital, December 23, 1903, as being dangerous, violent, and homicidal.

Physical examination on admission showed a poorly nourished, emaciated woman with much muscular weakness and atrophy of muscles, which are small and flabby. Contractures of legs. Was entirely helpless and frequently rolled out of bed. Many bad bed sores, some sloughing, and show neglect.

Neuromuscular condition.—Patient was unable to stand alone.

Reflexes.—Knee-jerks: right much exaggerated, left less than right. Achilles: brisk on left, exaggerated on right. Pupils dilated and irregular. Very sluggish reaction to direct light and none to consensual tests.

Cutaneous sensibilities.—Could not be tested on account of patient's mental condition, but she allowed pins to be imbedded in any part of the body without flinching. At times, however, she appears to realize some discomfort.

MENTAL STATUS, DECEMBER, 24, 1903.

Quiet most of the time, but at night is restless and frequently falls out of bed. Expression demented, lines obliterated. Speech shows characteristic defect, slurring and tripping over syllables, unable to grasp test sentences, and made no effort to repeat them. Profound dementia and unable to answer any questions, though no aphasia was demonstrable and no satisfactory examination was possible.

She failed rapidly and died January 7, 1904, of septicæmia.

Autopsy by Dr. A. M. Barrett.

ANATOMICAL SUMMARY.

Decubitus. Lymphadenitis of mesenteric nodes. Fatty degeneration of myocardium. Septic thrombi of branches of pulmonary arteries. Chronic passive congestion of lungs, acute splenitis. Focal hemorrhagic necrosis of liver. Chronic interstitial nephritis. Acute cystitis. Slight degree of arteriosclerosis of aorta. Chronic leptomeningitis. Septicæmia. Granular ependymitis of 4th ventricle. Chronic meningo-encephalitis. Degeneration and disappearance of tangential fibers in frontal region. Degeneration of posterior column in cord.

Brain.—Weight 1050. Hemisphere 380—right 390, stem 370. Dura not adherent. Pia cloudy and œdematous, less marked in occipital region. Blood-vessels quite normal. The convolutions, especially in frontal region, are narrow, sulci widened. In posterior part of both 1st frontal convolutions are areas of atrophy and fluid collections. Granulations of 4th ventricle. Cerebro-spinal fluid increased in amount and turbid. Cerebral substance flabby.

Microscopical examination.—Chronic meningo-encephalitis. Severe changes of general paralysis in cortex. Slight changes in glia cells. Vessels show characteristic exudates in their walls. Changes most marked in the left paracentral region and 1st right temporal. In this latter region is a small focus where the nerve cells show destructive changes and glia cells are increased. Everywhere the vessels show thickened walls independent of the infiltration. Tangential fibers have disappeared in the right and left gyrus recti.

Cord.—Schaffer's method for medullated fibers. Lissauer's tract shows some degeneration throughout. The posterior root bundles in 5th cervical are intact and in other regions are but little degenerated, and the entering roots all have some fibers, though thoracic 4th on the left the entering roots are degenerated. The fiber plexus around Clark's column is slightly degenerated. The endogenous systems are intact. The root zone, up to the cervical region, shows the most marked degeneration. In lower lumbar region the degeneration is most marked in the area occupied by the 3d fetal system as shown in Fig. V. The degeneration of the posterior columns in the cervical region is in the form of two bands on either side of the median line in Goll's column. There is also slight degeneration of the lateral tract in the lower lumbar and thoracic regions to the 4th thoracic where it stops. This is an early case of tabetic degeneration, as the kneejerks were exaggerated, though the cortical changes were far advanced, and the degeneration of the roots of the lumbar segments was very slight. The degeneration is limited to the exogenous systems, and is slight in comparison with other cases.

TABO-PARALYSIS.

We will now analyze these cases of tabo-paralysis. Nine cases were examined carefully for tabetic symptoms, with especial

reference to the cutaneous sensibility disturbances. As these cases were not too demented at first to co-operate with examination, charts of these disturbances have been made. Nine cases have come to autopsy and a systematic examination of the material has been made as far as possible. In one case (V) no autopsy was permitted. These cases include general paralysis and tabes in various combinations. Case I showed marked tabetic symptoms and the posterior column degeneration of cord was very extensive. This case was considered an atypical general paralytic during life and sections of the cortex examined did not show the lesion common to that disease. In Case II the tabetic degeneration is further advanced than in Case I and typical changes of general paralysis were found in the cortex. Case XII is an example of the other extreme; advanced general paralysis with slight tabetic symptoms. In this case the knee-jerks were exaggerated and would ordinarily not have been considered a tabetic case for that reason. The anatomical findings corresponded with the clinical picture. The other cases show intermediate variations and hard and fast lines of classification cannot be drawn. Four cases may be classed in Group I, where tabes precedes general paralysis by several years (II, VIII, X, and XI). One case (XII) may be classed in Group II where general paralysis precedes tabes. The others will have to go in Group III, as general paralysis and tabes occurring at the same time, although the symptoms of general paralysis were more prominent.

The cerebral symptoms of tabo-paralysis as seen in our series of cases and shown by other writers, especially Mott, do not differ from those seen in general paralysis and present the same variations.

Epileptiform seizures similar to those seen in general paralysis occurred in six cases and were impartially distributed among the various groups. Mott reports 30 per cent of the cases of tabo-paralysis with numerous epileptiform seizures, 34 per cent with one or more seizures, while in 36 per cent no convulsions were observed. Apoplectiform seizures affecting one side and transitory in character were observed in two cases and in one of these (Case IX) transitory sensory aphasia occurred. In Case III after an apoplectiform seizure affecting the right side, knee-jerks returned on that side for a while. This phenomenon has been mentioned by Gaupp and Mott and is difficult to explain.

The mental symptoms seen in tabo-paralysis are similar to those also found in general paralysis and show the same variations. With two exceptions the diagnosis of general paralysis was not questioned in our series of cases and was confirmed by the anatomical findings. The exceptions were Case I, cited previously, and Case X. In Case I very few mental symptoms were noted during a hospital residence of six years, although for two years previous to that he exhibited a marked lack of judgment, irritability and useless extravagances. He was but little demented and was considered an atypical case. In fact upon admission he was considered an epileptic. He had frequent epileptic convulsions, thick speech, marked incoordination and classical tabetic symptoms. From the sections of cortex examined by the Nissl method (right and left paracentral and left frontal regions) none of the characteristic lesions of general paralysis were found, and it is unfortunate that other regions of the cortex were not examined, as it is not unusual for the lesions of general paralysis to be found exclusively in certain areas. Case X is the other exception. As his mental trouble has lasted eight years and he is but little demented, able to work on the farm and reacts in a fairly normal manner to his surroundings.

These two cases, if not general paralysis, would come in the class of tabetics with psychoses other than general paralysis, many of which have been reported in the literature. Mott has selected and reported seven cases illustrating the above condition and in some he shows the marked similarity to general paralysis clinically, although he is unable to demonstrate the disease anatomically. Kraepelin^{*} also mentions this class of tabetics and cites this as one of his reasons for considering the disease processes separate and distinct.

Remissions of mental symptoms were observed more frequently in our series than is usually seen in cases of general paralysis. Four cases have remissions of from one to three years (Cases I, VI, IX, and X). These remissions were found in the two atypical cases mentioned above and in one that was atypical at the onset, but typical changes of general paralysis in the cortex were found. One case (IX) is at present tending to his work after a six-

^{*} Psychiatrie, Siebente Auflage, Leipzig.

months' remission, and, according to his wife, shows very little mental change, though he is somewhat ataxic.

Mott has observed that the presence of the two processes in the same individual has a tendency to hasten the end, and some of our cases seem to substantiate that point. Cases XI and XII, representing the two extremes of tabo-paralysis, were both rapid cases; in the former the duration was four months after the appearance of the mental symptoms, and in the latter the whole duration was one year.

The division of the mental symptoms of general paralysis, according to the form of psychosis, can be made usually at the onset of the disease, and some cases retain certain features during the whole course. We see cases presenting typical manic symptoms, also depression, while others are simply demented from the start. In a few cases paranoic traits seem the most prominent feature. In our series of tabo-paralysis the same variations were found, five cases may be classed as simple demented types (III, IV, VII, X, and XII), while two cases (VIII and XI) belong to the manic or expansive class. Case VI was decidedly depressed and suicidal, and Case V showed paranoic traits. Case II is an example of the circular or alternating form of psychosis, depressed for a year, then manic for a time, and after that daily variations with rather rapid decline after the onset of the manic symptoms.

The fundamental physical signs of tabes could be demonstrated in all of these cases. Disturbance of the reaction of the pupils to light were observed in all the cases. The pupils were immobile to light in seven, sluggish in four cases. In one case reaction to light was recorded as present when first examined, although two years later they were decidedly sluggish. Irregular pupils were found in eight cases, pin-point pupils in two, and in one case the pupils were dilated. Disturbances to accommodation were found in four cases, all of which of course were immobile to light.

The reflexes were as follows:

	Absent.	Exaggerated.	Diminished.	Unequal.	Normal.
Patellar.....	11	1	..	..	..
Tendo-Achilles.....	12	..	..	..	..
Elbow.....	6	2	2	..	2
Fore-arm.....	4	1	5	..	2
Abdominals.....	..	..	..	..	13
Plantars.....	2	..	..	..	10
Cremasterics.....	..	..	..	5	6

From the above table we see that the patellar reflex was absent in all but one case (XII), and in this case the tabetic process was considered as an example of an early type. Tendo-Achilles was absent in all the cases, and can be considered as important as the patellar reflex as a diagnostic sign.

Other symptoms, which are common in tabes, but not always present in the same degree such as lancinating pains, loss of sense of position of joints, marked ataxia, visceral crises, vesical and rectal paralyses, hypotonus, were found in a smaller percentage than in tabes, where the patient's condition permitted a complete examination. In the majority of cases the tabetic symptoms were not so prominent after the onset of the mental symptoms, especially if the patients were in the pre-ataxic stage. There is less amelioration of the tabetic symptoms if the patient is in advanced stage of tabes, when general paralysis supervenes, such as in Cases II and VIII. In Case XI there was a typical onset of tabes five years before admission to an insane hospital. Later this improved somewhat, and when patient was admitted to hospital no symptoms of tabes except absent knee-jerks and stiff pupils could be demonstrated. Objective sensory disturbances were found where the patient was able to co-operate. Cutaneous sensibility disturbances have been given much prominence as a constant and early sign of tabes. Fränkel and Förster⁷ have recently investigated thoroughly this phenomenon in fifty cases of tabes and constructed charts from the results of their examinations. In none of the cases were the cutaneous sensibilities considered normal. The trunk was affected in forty-five cases, the arm in thirty-seven, and the lower extremities in forty-four. Where the trunk was affected, anæsthesia to touch was more common and an earlier symptom than analgesia. In only eight cases was analgesia present without anæsthesia. Anæsthesia was also more common in the arm. In the lower extremities analgesia was present or the pain sense was much diminished, though anæsthesia was not so frequently found. Mott examined forty-eight cases of tabes and found objective sensory disturbances in forty-two. He failed to get such a large percentage in tabo-paralysis, which fact he explained by the patient being in the

⁷ Archives für Psychiatrie und Nervenkrankheiten, Band 33, heft 1.

pre-ataxic stage when examined and later becoming too demented to test satisfactorily.

He, like the first named writers, found that the disturbance of the cutaneous sensibilities corresponded to certain segments of the spinal cord whose posterior roots supplied the skin. The roots most affected were lower cervical, middle thoracic, lower lumbar and sacral.

In our series we were able to examine carefully nine cases that were not too demented to preclude such examination. Abnormalities were found in all and the areas most affected agreed with the observations of Mott and others. The trunk was most often affected, lower extremities next.

The following table shows the relative frequency of the disturbances in the different areas.

Regions.	Analgesia.	Hyperæsthesia.	Anæsthesia.	Thermanæsthesia.
Trunk.....	10	..	5	7
Lower extremities..	6	2	1	8
Feet.....	5	1	4	7
Arms.....	2	..	..	6
Hands.....	2	..	5	3
Genitalia.....	3	..	2	5
Face.....	2	1	1	2

In regard to the relation of the distribution of posterior roots to the areas of cutaneous sensory disturbances, the same segments were affected as found by Mott, noticeably the lower cervical, middle and lower thoracic, lumbar and sacral. (The upper thoracic segments were not affected to the same extent as found by Mott.)

From the diagram of the distribution of the posterior roots to the skin, after Seiffer, the chart on the following page has been constructed which agrees approximately with the affected areas as found by Mott.

In Cases IV, V, VI, VIII, and IX, the cutaneous sensibility disturbances were limited to the mid-dorsal, fifth lumbar and first sacral regions. These cases represent the slighter degree of tabetic affection and the clinical picture was supported by the anatomical findings.

Case IV, though able to co-operate well, failed to show any well-marked involvement of the cutaneous sensibilities, even on repeated examinations. The anatomical findings in the cord were

of a very mild degree of degeneration, and none of the posterior roots were completely degenerated.

Cases I, II, and X were types of advanced tabes, and consequently, the cutaneous sensibility disturbances were well-marked.

In Case VIII these disturbances were not so well-marked, though this case represented well-advanced tabetic degeneration. One peculiarity that was frequently noticed was the marked changes in the areas affected, at different examinations, even from

CASES.

Segments.	I	II	III	IV	V	VI	VIII	IX	X
C-1	C	A	....	....	....	....	....	....	C
2	A-B-C	A	....	....	....	....	....	....	C
3	C	A	....	....	....	....	....	....	C
4	....	....	....	....	....	....	....	....	....
5	....	....	....	....	....	....	....	....	A
6	....	....	....	....	....	....	....	....	A
7	....	....	....	....	....	....	....	....	A
8	A-B-C	A	....	C	....	....	B	....	A-C
Th.1	A-B-C	A	....	C	....	....	....	....	A-C
2	A-B-C	A	....	C	....	....	....	....	....
3	....	A	....	....	....	....	....	....	....
4	A-B-C	A-B	A-B-C	A-C	A	A	A	....	A-B-C
5	A-B-C	A-B	A-B-C	A-C	A	A	A	....	A-B-C
6	A-B-C	A	A-B-C	A-C	....	....	....	....	B-C
7	A-C	A	A-B-C	A	....	....	....	....	B-C
8	C	A	A-B	....	....	....	....	....	B
9	....	....	....	....	....	....	....	....	....
10	D	....	....	....	....	....	....	....	....
11	C	....	....	....	....	....	....	....	....
12	C	....	....	....	....	....	....	....	A
L. 1	A-B-C	....	....	A	....	....	A	....	A
2	D	....	....	A	....	....	A	....	....
3	A-C	A	C	....	....	....	....	....	....
4	A-D-C	A-C	C	....	....	....	....	....	....
5	A-B-C	A-B-C	B-C	B	B-C	A	C	B-C	A-D-C
S. 1	A-B-C	A-B-C	B-C	B	B-C	A	C	B-C	A-C
2	A-C	A	....	A-C	....	....	....	....	A
3	A-C	A-B-C	....	....	B-C	....	....	....	A
4	....	....	....	....	....	....	....	....	....

Anæsthesia.....A

Hyperanæsthesia.....D

Analgesia.....B

Thermanæsthesia.....C

day to day. Areas affected at one time may be normal when tested again. (Compare Cases I, III, and X.) Usually these areas are slight and some areas were constantly affected. Usually the progressive character of the cutaneous sensibility disturbance is very marked. In Case I an area on the right leg that was hyperæsthetic during lancinating pains on that side, on subsequent examination with the absence of these pains, entire analgesia was found.

This variability in the areas affected has also been found by other observers. Much stress has been laid upon the polymor-

phous forms of the sensory disturbances of the skin. Results may be modified by several things, such as cerebral fatigue, summation of excitation, or exhaustion of excitation. Besides this the overlapping of the various roots in certain areas will confuse one's results. No one, who has attempted to examine cases for sensory disturbances, but will agree with the difficulties arising from the facts above mentioned.

In our series, examinations made at different times have been charted and two charts are given in the majority of cases with the dates attached. In some cases upon first examination the cutaneous sensory disturbances were slight and later these patients were too demented to co-operate, so that charts were not made, and unfortunately these cases could not be used for the purpose of localization.

Our experience has been that these disturbances as seen in tabo-paralysis do not differ from sensory disturbances found in tabes, except in the extent of the areas affected, and this seems to be in harmony with the anatomical findings. Other symptoms found in tabes, but not always constant, were found in cases of tabo-paralysis though to a less extent.

Girdle sensations and lancinating pains were observed in a few cases, more frequently among the cases where tabes preceded general paralysis by several years, but in only one case were these disturbances noted (Case I), after patients came into the hospital. Only two cases had recurring gastric crises, and one case suffered from optic atrophy (Case VIII). This case belonged to the group cited above.

PATHOLOGICAL ANATOMY.

It is more difficult to establish the unity of tabes and general paralysis upon the basis of pathological anatomy, because of the unsettled status of the pathogenesis of the two processes. Conflicting opinions are also held regarding the nature of the processes, especially that of general paralysis, and it will be necessary to first review some of these opinions before discussing their identity.

Nissl in his latest work* reviews the question of the nature of

*Histologische und Histopathologische Arbeiten, Jena, 1904.

the paralytic process, and comes to the conclusion that two processes are present in the cortex. The inflammatory process, affecting the non-nervous elements (blood-vessels, pia) and another which is not inflammatory, but degenerative in character, affecting the nervous elements (nerve cells, fibers and neuroglia).⁹ While these processes go hand-in-hand they must be considered as distinct, and neither must be considered as pathognomonic of the paralytic process. Some cases will show one process more prominent than the other, and certain regions of the cortex in the same case will show this variation. He places much stress upon the occurrence of the plasma cells in the exudate of the adventitial sheaths of the blood-vessels as proof of the inflammatory character of the process in the non-nervous elements.

Schaffer¹⁰ is inclined to consider the degenerative character of the process as most important. He also considers the degeneration an elective one for certain systems of fibers, namely the finer tangential fibers, and from these superficial fibers the disease spreads to other layers. He argues from the fact, that in typical cases of general paralysis certain regions of the hemispheres, i. e., the frontal lobes, are always affected earlier and in a more marked degree than other regions, the occipital region being the least affected. He admits the occurrence of atypical cases, in which there is some divergence from the rule, but still maintains that the process is selective for certain systems or is a "system disease," rather than a diffuse one. This view is also held by Tuczek and Zacher. Schaffer is opposed by Nissl and Alzheimer, who, though they admit that in typical cases the frontal lobes are affected more than others, maintain that the process is a diffuse one and not elective in character, and they claim that Schaffer, by admitting atypical cases, must admit also the diffuse nature of the process as well.

Mott¹¹ is inclined to agree with Schaffer in regard to this elective character of the process and advances the hypothesis that the localization of the process depends not only upon the presence of some irritant toxin, but upon anatomical and physiological

⁹ Regressive changes in nerve cells and fibers and progressive changes in neuroglia, as a result of degenerative process in nerve elements.

¹⁰ *Loc. cit.*

¹¹ *Loc. cit.*

factors as well. The peculiar condition of the arterial and venous circulation in the fronto-central regions, which favor stasis, he believes partially explain why these regions are attacked.

Coupled with this anatomical factor is that of stress, and these would tend to lower the resistance and so allow a toxin to fix upon these regions of the central nervous system.

This toxin would come from syphilis. He suggests that syphilis, like some other toxins (diphtheria, tetanus), may contain some latent elements which have a special affinity for nervous structures, but it takes much longer for these elements to become active. From the fact that we have no knowledge of the specific germ of syphilis and that as yet all animals enjoy an immunity to infection, he claims that it can be argued by analogy that the syphilitic virus may contain several poisons, one of which is latent and produces these late manifestations, tabes and general paralysis, also that this toxin only becomes operative under certain abnormal metabolic conditions of the central nervous system. While this is a reasonable hypothesis and worthy of consideration it is difficult to establish, and the anatomical features have been attacked by Alzheimer. In view of the difficulty in proving the rôle that syphilis plays in the causation of the process, Nissl prefers to consider the subject not from a bio-chemical, but entirely from an anatomical view point. Mott claims that the plasma cells are indicative of an acute irritative process in the cortex—"and their abundance is clearly associated with the amount of acute neuromic irritation and destruction"—which is somewhat at variance with Nissl's view.

While there are other views on this question, this represents the present status of the work, and as yet the pathogenesis is much in doubt. By assuming a position that does not side with either extreme we are justified in arriving at the following conclusions.

1st. The general paralytic process in the cortex is both inflammatory and degenerative in character.

2d. That these processes are not dependent upon each other, but are probably produced by the same harmful agent.

3d. In typical cases, certain regions are always affected earlier and to a more marked degree than others.

4th. Certain systems of fibers are more liable to degenerate than others.

5th. That the pathogenesis is as yet unknown.

We will now consider the theories which have been advanced to account for the tabetic process.

Obersteiner and Redlich accounted for the degeneration of the posterior root fibers by a mechanical strangulation of the posterior roots in passing through the meninges of the cord, due to the meningitis. Nageotte attempts to explain the same degeneration by an inflammatory process in the membranes covering the roots. Both of these theories are attractive, but have many faults, principally that meningitis is not always an early finding in tabes; also this theory fails to account for the changes that occur in other parts of the nervous system.

Theories based upon the neuron concept have been formulated, but up to the present time anatomical studies have failed to substantiate them. That the spinal ganglion cell is the center for the posterior root fiber is not doubted, but so far investigations have failed to show changes in these cells that could account for the extensive degeneration of its proximal fibers. Another point is that the peripheral branches would have to show degeneration as well as the proximal branches, and this has not been demonstrated anatomically as yet.

Marie's hypothesis, that the finer end arborizations of the spinal branches of the ganglion cell are first affected and accounts for the intra-medullary degeneration of the posterior roots, has not been entirely substantiated, though it harmonizes with some of the anatomical facts. As yet we have no proof that the spinal ganglion cell is the seat of the primary affection of the spinal afferent neurons.

The hypothesis based upon the presence of a peripheral neuritis in tabes, whereby retrogressive changes occur, which affect the spinal ganglion cells and through them affect secondarily the proximal branches is untenable, because the peripheral neuritis is not a constant symptom in tabes and usually does not occur until after the intra-medullary degeneration.

Edinger's theory of the tabetic degeneration is based upon the hypothesis that in functioning, there is a natural loss in the nervous elements, which in normal conditions is made good and that conducting paths that are over-exerted may pass the limit of natural replacement of material and so show the phenomena of

degeneration. Various conditions, such as blood supply, toxins, etc., may be the cause of the fibers of conducting paths losing this normal balance, and degeneration occurs. This theory explains many things, but why the posterior roots are affected in preference to the anterior roots can be explained only by assuming that the posterior roots offer less resistance to the toxic agents.

The anatomical studies at present would lead one to believe that the degeneration of the posterior columns in tabes, is a primary intra-medullary degeneration of the posterior roots, and that other changes are produced by the same factors. This view appears more rational as it supports the theory of a toxic substance, selective in character as causing the process. With the widely accepted doctrine that syphilis is the cause of the tabetic process this view is best harmonized.

As regards the pathological anatomy of tabo-paralysis, a series of cases quite bear out the opinion of Schaeffer and Mott that in regard to anatomical location and character the degeneration of the posterior columns, it is identical to that found in tabes. In a great many cases it was not so far advanced, but the same exogenous systems were affected and the segmental distribution was the same, usually more marked in the middle thoracic and lumbo-sacral regions.

The degeneration of the posterior roots in no way differs from that of tabes, and this is shown in the drawings made from serial sections. The root zone of Charcot usually was degenerated, Lissauer's tract or the marginal zone was in the advanced cases almost entirely degenerated, in the other cases moderately so. It is stated that this tract is one of the first to be affected and to a marked degree in tabes. The endogenous systems, the comma tract, ventral posterior zone, the septo-marginal tract, oval area of Fleichsig, and triangle of Gombault and Philippe were but little affected except in Cases I and II, which were considered pure tabes with all the classical symptoms and very far advanced. In those cases the endogenous fibers were affected to some extent and a great deal more than in the other cases.

The recent work of Fleichsig and Trepinski, who investigated the myelination of the posterior columns in the foetus, is very interesting in regard to the location of the degeneration in tabes. The latter finds the myelination of fibers occurs in regular

systems, and he makes a division of four systems, in order of their myelinization. The third foetal system, which he holds is a well-defined area, conforms with the area of degeneration in the lumbar region in beginning tabes. The similarity of the two pictures as commented upon by Barker¹³ is very striking and of much interest. This is shown very clearly in the photomicrograph (Fig. 5) of a lumbar segment in a case of general paralysis with very early tabes (Case XII), in which the patellar reflexes were exaggerated, and this picture is identical with the picture shown by Trepinski, i. e., beginning lumbar tabes.

This is contrasted with Fig. 6, which was considered a case of arrested tabes (Case XI) after a typical onset, and the same area is found degenerated though the columns are narrower and more shrunken. The fact that the degeneration of the posterior columns in tabetic general paralysis takes the typical form of a beginning tabes, is considered by Schaffer as very important in establishing the identity of this degeneration and pure tabes, and the point is well taken. The two pictures are similar.

Fürstner, Schmaus, and Gaupp all claim a decided difference in the posterior column degeneration of general paralysis and tabes. They divide this degeneration into:

- 1st. Posterior column degeneration that cannot be differentiated from pure tabes. These cases they claim are pure tabes upon which general paralysis has been grafted later.

- 2d. A combined degeneration of posterior and lateral columns, which, they claim, does not resemble tabetic degeneration, but is scattered without regard to definite systems.

They hold that the endogenous system is affected by the degeneration as seen in general paralysis, which is affected in tabes but little, and then only in advanced cases.

Mott, on the other hand, shows that the anatomical findings in the two conditions are, as a rule, identical, both as regards exogenous and endogenous fiber degeneration. The same segments are affected in the same manner, and in advanced cases nearly all the exogenous fibers are destroyed. Schaffer comes to the same conclusions and can find no difference in the degeneration. Nageotte holds that the posterior column degeneration in general

¹³ The Nervous System, p. 436.

paralysis is identical with the tabetic lesion, whether combined with lateral column degeneration or not. In regard to the lateral column degeneration, Mott considered it as coincident and not related to the posterior column disease. The cause of this degeneration he considers as cerebral, and from the fact that it is seen more distinctly in the lumbo-sacral region and disappears in the higher regions, he argues that it is caused by progressive atrophic changes, affecting cortical psycho-motor neurons with the longest axons. The affection of the direct pyramidal tracts, Mott ascribes to changes in the cortex, either bilateral or unilateral, and associated with epileptiform seizures.

The findings in our series of cases, though small in number, tend to support the findings of Schaffer and Mott.

Three cases showed degeneration of the cross pyramidal tract (Cases II, VI, and XII), while Case II was a classical tabetic and, as in the others, very marked and extensive changes of general paralysis were noticed in regions of the cortex, and in only one case were convulsions observed with this degeneration (Case XII).

As would be expected, the cases belonging to Group I showed the most extensive degeneration of the posterior columns (Cases I, II, and VIII); and in these the endogenous systems were affected in a marked degree. Case XI, which from the clinical symptoms may be considered as belonging to this group, in which the tabetic symptoms appeared five years before the onset of mental symptoms and were stationary for a long while, strikingly illustrates, by the moderate degeneration found in the posterior columns, how the tabetic process may be temporarily arrested. The degeneration, as compared with other cases in this group, is much less marked. In no case did affection of the endogenous systems occur without marked degeneration of the exogenous systems and the relation between the degree of ataxia and the degree of affection of the endogenous systems, also the degeneration of the fibers around the cells of Clark's column, as expressed by others, is substantiated by these cases, all of which were markedly ataxic. In Case VII the degeneration is more marked than in others of the group of general paralysis and tabes occurring at the same time, and partakes of the characteristics of Group I.

The lesions of the cortex in our series of cases, with one exception, show typical changes of general paralysis. In some cases these changes were very far advanced. In Case XI, which has been cited several times, the lesions of the cortex are very early and the nervous elements show very marked change, while there is little change in the blood-vessels and neuroglia. Case I is the exception, as we failed to find the usual changes of general paralysis in the sections examined, viz., the left frontal, right and left paracentral convolutions. However, this case showed the macroscopic appearances of general paralysis; adherent dura, haziness of pia, especially over frontal lobes, with considerable injection of pial vessels. Pia about the temporal lobes was much thickened and adherent. Microscopically, the ordinary changes of general paralysis could not be demonstrated. It corresponds to a similar case reported by Mott, and he raises a question whether his case was one of mania and tabes or whether tabetic paralysis with arrest of mental symptoms. Case II, while a typical case of tabes with advanced affection of the posterior columns, also had well-marked advanced changes of general paralysis in the cortex. While in Case VII the changes in cortex are very slight, so we see the variability in the anatomical picture in tabo-paralysis is similar to that seen in general paralysis.

In a number of cases the spinal ganglia were studied by different methods, but without any positive results as yet. Sections stained with toluidin blue show very few cells that were changed, while the majority of cells had a normal appearance even in the advanced cases of tabes. Studies with the Unna method were equally negative as regard changes in the ganglia that bore any relation to the extensive degeneration seen in the intra-medullary portion of the posterior roots. This has been the experience of Mott and others who have made similar studies.

While we are convinced that the tabetic and the paralytic processes, when found together in cases of tabo-paralysis, are identical with the processes when found separately, we have yet to consider the question,—Are the processes identical, only differing in location in the central nervous system?

If we accepted Schaffer's view, that general paralysis is a system disease, in that it selects certain systems of fibers in certain regions of the cortex, we can, as he does, harmonize with the

tabetic process, which, from our present knowledge, must be considered as a selective or system disease; and Schaffer brings strong proof to uphold the point of the selective degenerative character of the general paralytic process, and states that the "anatomical characteristics of the postulated differences of the two processes are only artificial," and that the etiological factor only attacks the point of least resistance first.

Mott argues from a bio-chemical view point, assuming the presence of an irritant toxin (which is not unwarranted) and arguing that it acts upon the central nervous system in a manner analogous to alcohol, lead and other poisons. These may produce a morbid process in the brain, spinal cord or peripheral nerves in different individuals, though the disease process attacking these various regions, is essentially the same. And as it is true for these poisons, it is reasonable to suppose that the toxin of syphilis follows the same rule. This view would consider the process as the result of an irritant poison only affecting the regions of the central nervous system that offered the least resistance. This view is in harmony with some of the known facts, and is practically the same as that taken by Schaffer. Edinger's theory of the tabetic degeneration is based upon the same hypothesis.

Nissl merely leaves out the bio-chemical factor and only considers the anatomical picture and believes that the processes are entirely separate.

Unfortunately, this question cannot be entirely settled from an anatomical view point, until we have a better knowledge of the pathogenesis of the processes, but from the evidence before us we would be warranted in believing that a striking similarity in the processes is present and that those who take the view that the processes are identical, have some basis at least for their views and that their opponents have as yet failed to entirely prove the contrary opinion.

In conclusion:—From the study of the literature and the cases presented in this series we can come to the following conclusions:

1st. That clinically tabes and general paralysis present many analogies in etiology, symptomatology and course.

2d. That their occurrence in the same individual is more than a coincidence.

3d. That in these cases of tabo-paralysis the symptoms presented are identical with the symptoms of general paralysis and tabes when seen apart, only differing in degree, according to the extent of the anatomical lesion.

4th. That the clinical symptoms of tabo-paralysis have the same anatomical basis as in the separate diseases.

5th. That anatomically the affection of the posterior columns of the cord as seen in tabo-paralysis does not differ from the picture presented in pure tabes. The same systems are affected and the segmental character of the process is the same, also that the process in the cortex is identical with that of general paralysis.

6th. While the above facts show the intimate relation between general paralysis and tabes dorsalis, the unsettled status of their pathogenesis at present, prevents their identity being absolutely established on an anatomical basis.

I herewith desire to express my thanks to Dr. Meyer and Dr. Barrett for their valuable help and criticism, also my colleagues at the Worcester and Danvers Insane Hospitals, who have also rendered valuable assistance in the preparation of this paper.

EXPLANATION OF PLATES XLV, XLVI, AND XLVII.

(Medullated fiber preparations) $\times 8$ diameter.

FIG. 1.—3d cervical segment from Case II.

a. Entering posterior roots intact, also root zones.

Degeneration limited to Goll's column.

FIG. 2.—8th cervical segment from Case II.

a. Complete degeneration of entering posterior roots (compare Fig. 1), also degeneration of root zone.

b. Lissauer's zones severely affected.

FIG. 3.—5th lumbar segment (Case II) advanced degeneration of posterior columns, only the ventral posterior zone intact, and a few fibers in the septo-marginal tract.

FIG. 4.—8th thoracic segment (Case II), showing advanced degeneration of posterior columns, also degeneration of plexus of fibers around the cells of Clark's column (a).

FIG. 5.—5th lumbar segment (Case XII). Beginning tabetic degeneration. The light triangular area corresponds to the 3d fetal system of Trepinski. Slight degeneration of Lissauer's zone. (Contrast Figs. 3 and 6.)

FIG. 6.—Lower lumbar segment (Case XI). Moderately advanced degeneration of posterior columns, more extensive than in Fig. 5. Endogenous systems intact. Posterior root bundles show scattered degeneration. Posterior columns are more shrunken than in Fig. 5.

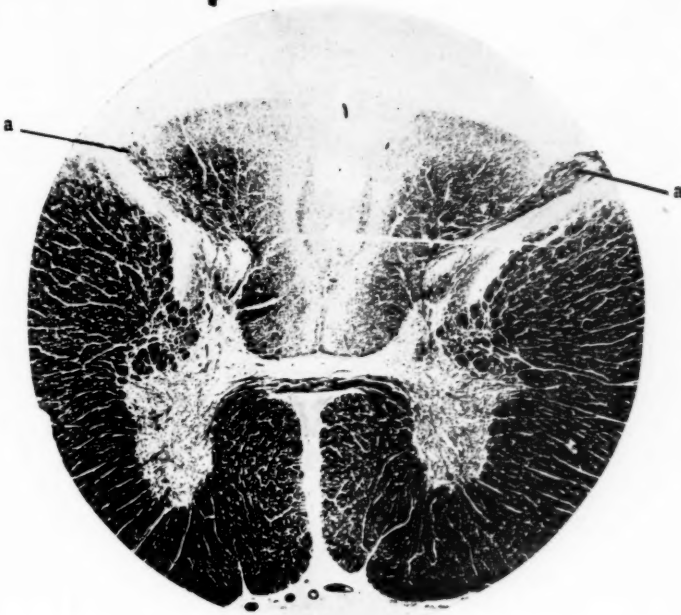


FIG. 1.

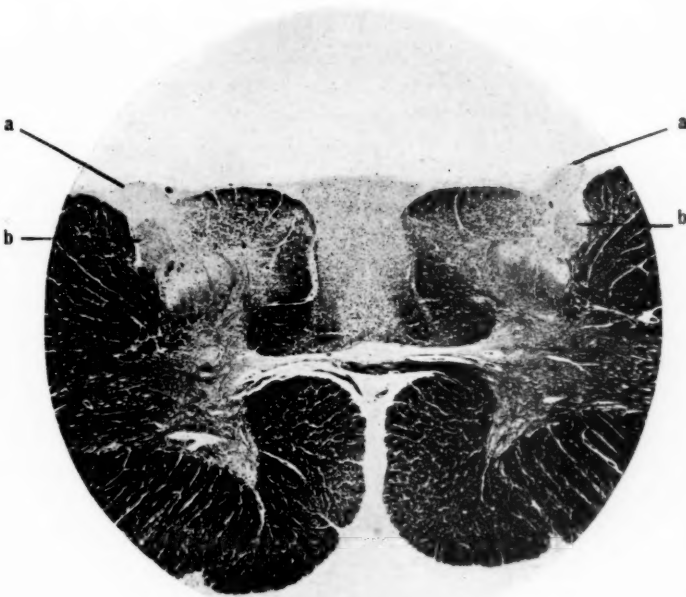


FIG. 2.



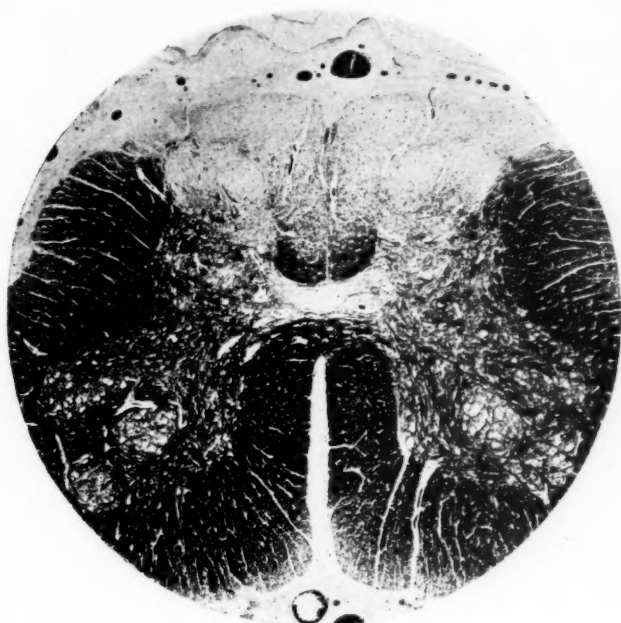


FIG. 3

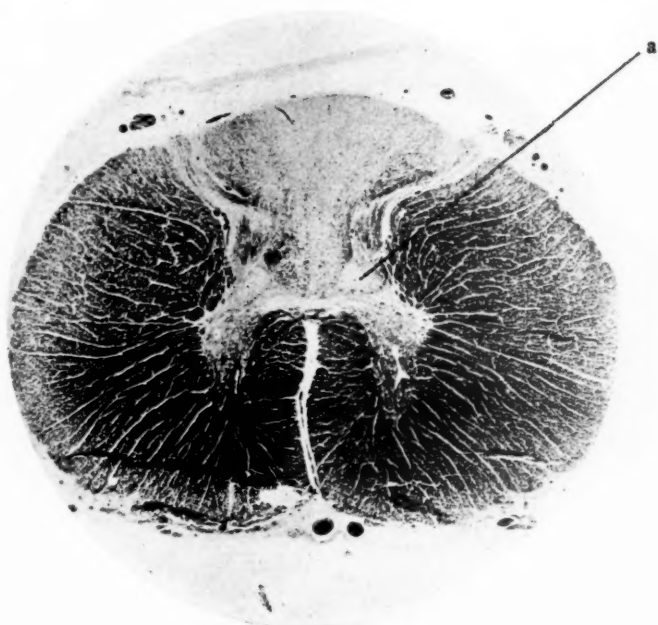


FIG. 4.

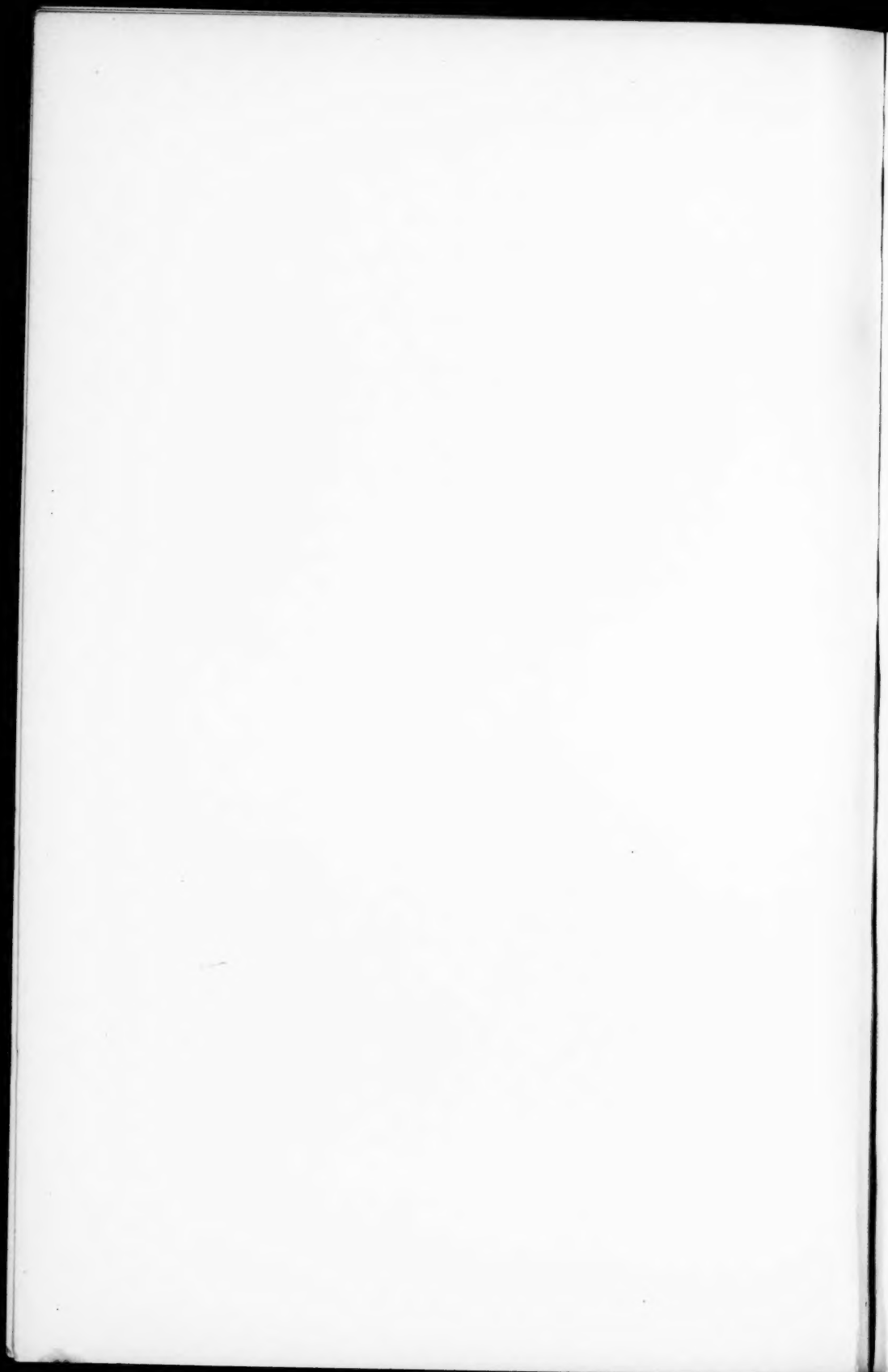
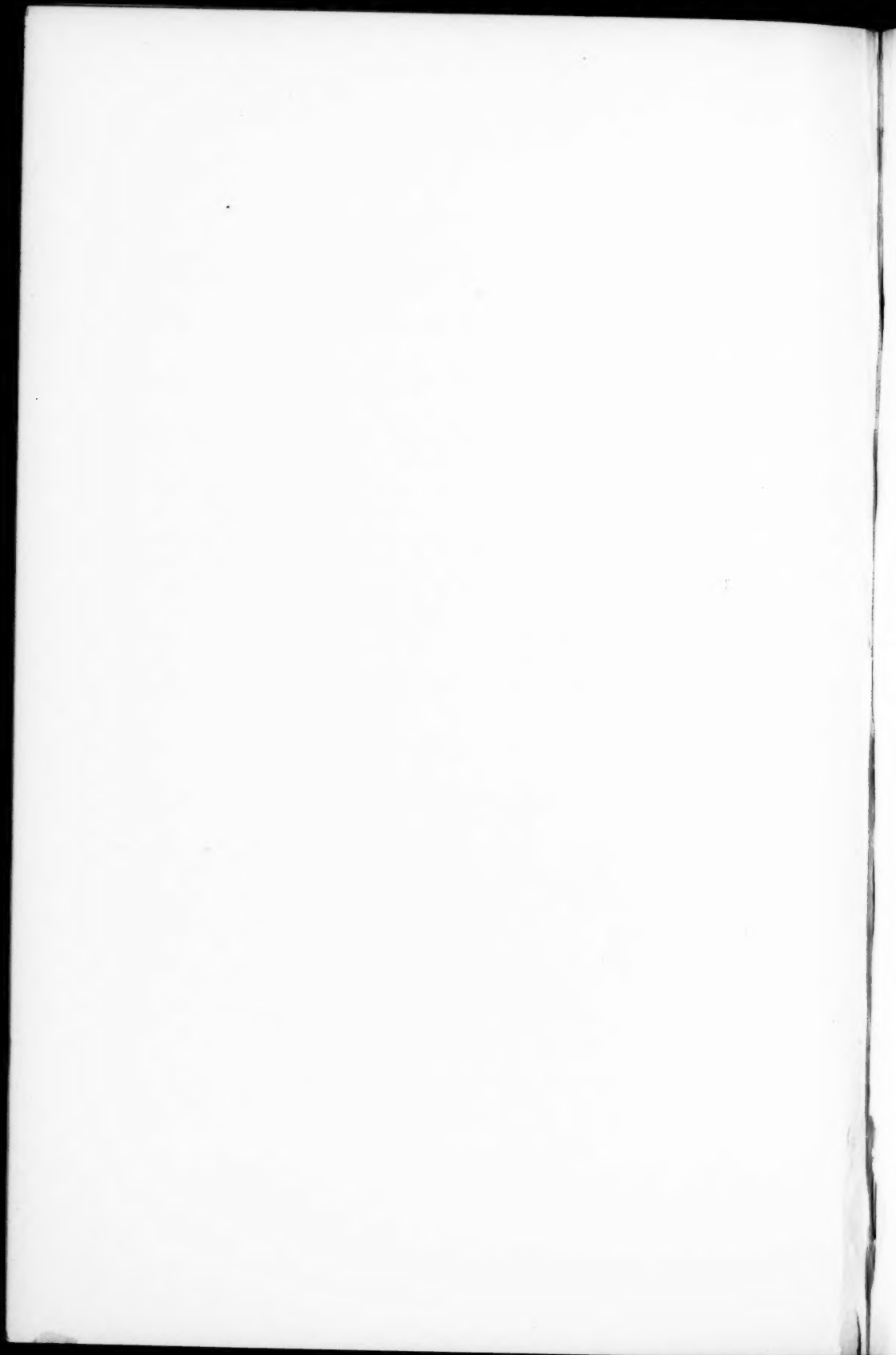




FIG. 5.



FIG. 6.



NOTES OF A VISIT TO SOME FOREIGN HOSPITALS FOR THE INSANE—MAINLY IN GERMANY.

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Several months ago an opportunity was afforded me of seeing some of the best psychiatric clinics of Germany and of renewing old acquaintances and revisiting familiar scenes in France and Great Britain. To my experiences and observations in the latter countries, I shall refer but briefly, it being the intention of the present paper to speak more particularly of the clinics of Germany.

It is now several years since I had the pleasure of reporting upon a visit to some of the asylums and hospitals for the insane of Great Britain.¹ The observations then made pertained largely to questions of management, nursing, restraint and non-restraint, a question, at that time, still much discussed on this side of the water, the occupation and recreation of patients, and cognate subjects, and but little notice was made in the "Notes" of the clinical methods or laboratory work where any was undertaken in the institutions visited.

Subsequent visits to some of the institutions seen in 1882, and to others both in Great Britain and on the continent were not materially more fruitful in observations, of methods of clinical study of cases, or in therapeutic procedures though not by any means devoid of much that was of value in these as well as other directions.

When, therefore, I approached the psychiatric clinics of Germany it was not so much to observe the methods of their management, though these points were not by any means without interest, as to study the clinical and laboratory methods in vogue. The

¹Notes of a visit to some of the asylums of Great Britain. *American Journal of Insanity*, January, 1883, p. 269. *Bulletin de la Société de Médecine Mentale de Belgique*, 1883.

clinic at Giessen had been described by at least one American visitor,² and the one at Heidelberg was perhaps better known through the work of its director, Kraepelin, while the recently opened and the newest establishment, the one at Kiel, had just been fully described and illustrated.³

The clinic at Kiel was the first of the German clinics which I visited. It had been open but a few months, and but a small number of patients had been admitted, although the wards were fairly full. It is delightfully situated on an elevated site overlooking the bay, in the northern portion of the town, and about half an hour's walk from the university and the other clinics, medical and surgical. Although a description of the buildings with illustrations has been read to the Association and published in its transactions, I shall, at the risk of some repetition, go somewhat into detail in describing them, as they represent the most recent German ideas, except possibly the new clinic at Munich, just opened. The clinic has been erected on the pavilion plan (see Plate XLVIII). There is a central administrative block with wards on either side (Hauptgebäude), two villas for first- and second-class patients of each sex, and two detached buildings for excited cases (Isolirhäuser), a central kitchen and laundry building combined (Wirtschaftsgebäude), heating plant (Kesselhaus), porter's lodge at the gate, and in one corner of the grounds the house of the medical director. The clinic is intended to accommodate one hundred and thirty-nine patients, of whom twenty-three are first- and second-class (paying), and one hundred and sixteen third-class (public) patients.

The director of the clinic, who was active in the preparation of the plans and in seeing them put into shape to the most minute detail, is Prof. Siemerling. He holds the chair of psychiatry in the Kiel University and gives clinical instruction at the hospital.

² A visit to the Newest Psychopathic Hospital. By Frederick Peterson, M. D. *The Medical News*, January 20, 1900.

³ Der Neubau der psychiatrischen und Nervenkllinik der Universität Kiel, von Dr. E. Siemerling, Professor und G. Lohr, Kgl. Reg.-Baumeister u. Komm. Bauinspektor. *Klinisches Jahrbuch*, 1902. This clinic has also recently been described and illustrated in an article published in *The Proceedings of the American Medico-Psychological Association*. Vol. X, p. 426. By Dr. L. Pierce Clark.

In the central or administrative building the basement (Plate XLIX) contains the chambers for heating coils, a porter's lodge, rooms for photo-micrography, and an Aertekasino (recreation rooms for the medical staff). On the ground floor (Plate L) are waiting rooms for the examination of out-patients (Poliklinik), rooms for an assistant physician, a chemical laboratory, and a large room which can be devoted to use as a chapel or for other purposes.

On the second floor (Plate LI), over the chapel just referred to, is a large lecture hall with seats for ninety students, arranged as an amphitheater with an entrance for the students at the top row by means of a short flight of stairs. The private office of the medical director communicates by a door with this lecture hall. I saw and had demonstrated to me in this hall the Zeiss epidiascope, used for projecting microscopic preparations, photograph positives, large slides, and even opaque objects, as for example a drawing, or the page of an illustrated book, or even pathological specimens, in a magnified form. There is also on this floor the laboratory, a conference room for the medical staff, a medical library, and rooms for another assistant physician. On the dormer floor are rooms for a third assistant physician. Extending to the right and left of the central building are the wards for quiet patients, men and women (Plate LII). Entering the ward on either side through a short passageway, one sees on one side of the passage a room for the medical examination of patients, supplied with the usual instruments for general physical and neurological examination, and on the other a room for a single patient. The observer then passes into a dormitory or ward for ten patients and two nurses, and then into a passageway on either side of which are rooms, three of which are for patients, one used for an electric bath, three other bath-rooms, and two water-closets, one at either end, and a stairway leading to rooms above this central portion for three nurses. Beyond is another ward for ten more patients and two nurses, and then a passage leading out of the end of the ward similar in length to the one entering the ward, with a patient's room on one side and a nurse's on the other.

At either end of these two wards and in line with the rear line of the buildings are two separate vilas, one for either sex. These villas are two stories in height and are for first and second class patients. In the basement are kitchens, an arrangement which ap-

peared to me to be a serious mistake, although the communication of odors to the upper floors was as carefully as possible guarded against. There are also storage rooms and the heating and air filtering apparatus. There is a room for an assistant physician in each of these villas.

The ground floor (Plate LIII) has a large day room and pantry and serving room, bath room, and water closets, and four rooms accommodating from two to six patients each, and a nurse's room. The second floor (Plate LIV) has a similar arrangement, except that there are six single rooms and two rooms one for two and one for four patients.

The isolating wards for noisy patients (Plate LV) accommodate thirteen patients each, and are but one story high. They each have a large day room, a pantry, and serving room, two observation rooms for three and five patients respectively, and five single rooms, a bath room and water closet.

The central kitchen is midway between the two isolation wards, and in the same building is the laundry, a very undesirable combination. The kitchen is light, well arranged for the preparation of the simple and somewhat frugal diet of the public patients, but there is no arrangement for conveying food to the widely separated wards except through the open air and by hand. After the food arrives at the wards it is warmed over, when deemed necessary, in the small service pantries on each ward. In this building also reside the kitchen employes and other servants.

The buildings are warmed by the indirect system, and arrangements exist for filtering the air and modifying the humidity; and are lighted by electricity. The house of the director is in one corner of the grounds, near the main entrance, and is a very tastefully constructed and commodious structure.

The next clinic which I visited was that of Prof. Jolly, of Berlin, whose recent death is mourned by all students of psychiatry. This, like that at Kiel and those at Heidelberg and Giessen, is a mixed clinic, that is, both mental and nervous cases are received. At Berlin, however, the plan is to be tried of having the buildings separate. The neurological clinic is new, but recently opened, and contains the laboratories, library, lecture hall, anatomical and pathological museum, etc., which will be common to both. At the time of my visit a large plot of ground was being cleared for the

erection of the wards for the insane, which are to be built somewhat in accordance with the plans at Kiel and Giessen, that is, on the separate pavilion plan. The Germans do not try to make things appear different from what they really are, and refrain from calling a structure, which affords room for from fifteen to twenty patients and their nurses, a cottage!

The new neurological clinic is in the general enclosure of the large Charity Hospital of Berlin with its various departments or clinics, and is the most modern of them all. Entering at a central doorway, to the left of which is the porter's room, one ascends by a flight of stone stairs to the third floor, where a large hall or lobby affords lodgment for an interesting and valuable collection of pathological specimens of the brain and general nervous system, and also a series of casts and drawings illustrating normal and diseased structures. This lobby gives access by several doors to the top seats of the lecture hall, which occupies the space of two floors. The lecture hall is supplied with a projection apparatus, and all of the windows which light it from two sides are provided with light-proof screens which effectually darken the room when the projection lantern is used. Back of the lecturer are blackboards and supports for drawings and charts. A door leads from the floor of this amphitheater to the director's private room and to a waiting room for patients. Here I heard my first clinical lecture in German upon psychiatry. The first patient was one with paranoia. As he was brought in by one of the assistants, the clinical notes of the case comprising a history of the case, and an account of the observations made since his admission to the clinic, were laid before Prof. Jolly; a student was called by name from the audience and proceeded to examine the patient before the class. After examining and questioning the patient he announced his diagnosis. Prof. Jolly then took up the case, pointed out certain facts and symptoms which the student had overlooked, and then gave a brief discourse on paranoia. The next case had symptoms of katatonia, or katatonic symptoms, depending upon whether one admits Kaulbaum's contention that katatonia is a distinct disease or the one which is now receiving the largest number of adherents that katatonia is but a symptom which appears in different conditions and under different guises. The student called to examine this case, overawed possibly by the contradictory view held

by equally eminent men, could not make much out of the case, and it was soon taken out of his hands and the essential features, both psychical and physical, which were present, rapidly and clearly pointed out. I soon discovered that Prof. Jolly thought for himself and that he did not hesitate to express his dissent from some of the views held by other teachers.

The third case was wheeled into the room on a bed and was a case of alcoholic neuritis with Korsakoff's symptom-complex, and the last case, a woman, proved also to be one of alcoholic origin, one of chronic alcoholism, with the delusions of suspicion so characteristic of many of these cases.

After each of these cases had been examined by students and the points they made out demonstrated to the class, Prof. Jolly took up the cases and gave a brief talk on the effects of alcohol.

Prof. Jolly conducted me about the wards of the clinic, which, being intended eventually for nervous cases only, do not differ materially from the wards of a general hospital. The laboratories are large, light, and well arranged, and are liberally supplied with apparatus. There are in connection with the clinic, rooms for spray, needle, and electric baths, massage rooms, and the like.

The rooms for the reception and examination of patients are well supplied with all the necessary apparatus, electric and otherwise, for diagnostic purposes, and there is a separate room for electrical treatment. On the ground floor there is also a large room filled with suitable apparatus for the mechanical exercise of paralyzed limbs and muscles.

I spent two days at this clinic with much interest. Prof. Jolly was for many years, as is well known, the editor of the *Archiv für Psychiatrie und Nervenkrankheiten*, established by Griesenger. He is succeeded in the editorial management by Prof. Siemerling, of Kiel. I spent one day in an excursion to Daldorf, one of the suburbs of Berlin, where I saw the large and elaborate district asylum, which receives its patients largely from the clinics of the city. Prof. Sander, the director, was away, but one of his assistants kindly showed me about and gave me every facility for seeing the institution. The present asylum was opened in 1880, and is in its general construction and arrangement much like one of our large state asylums. It has accommodations for over 1100 patients, has about 100 criminal insane in a separate building, and a

small establishment for idiots. The director and his family reside in the main building in spacious apartments, and he is the supreme head of the establishment, having under him a suitable staff of heads of departments who are held responsible to him alone. This indeed is the principle upon which all the German hospitals and clinics are organized. The director is the supreme authority, having, of course, subordinates who take from him the care and trouble of details. The idea is the same as that announced long ago by Heinroth: "The proper soul of an institution for the insane is the physician," and the Germans have acted consistently upon that theory ever since. Speaking of Illenau, Dr. Roller said: "The improved condition of this institution, as well as of others of the kind, dates from the time when the physicians were made supreme." The laboratory at Daldorf is large and well arranged; it consists of rooms for chemical (clinical pathology) and pathological study, well supplied with apparatus. The patients at Daldorf are nearly all chronic cases, though a few acute cases are admitted, and some here who are sent from the clinics to complete their convalescence.

In Berlin I also saw Prof. Mendel, who has a mixed out-of-door clinic for mental and nervous cases, and who is the editor of the *Neurologisches Centralblatt*, and one of the editors of the *Psychiatrisch-Neurologische Wochenschrift*. Both Professors Jolly and Mendel speak English fairly well, and the latter has visited America, attending the International Congress in 1887. From Berlin I went *via* Dresden to Prague and spent two days with Prof. Pick in his clinic, which is part of the large general hospital of Prague. This clinic is over-crowded, the buildings are old and badly furnished, but the work carried on is of an excellent character. The wards for the insane are over-crowded and some of the patients sleep on the floor. I saw here a relic of early days, a covered bed; it was not, however, in use.

Prof. Pick has four assistants and a laboratory assistant. The laboratory is small and poorly furnished, and, like the wards, reflected the niggardliness or poverty of Bohemia. The excellent work both from a clinical and pathological standpoint which has been done at the clinic of Prof. Pick is but another illustration of the fact that it is not the laboratory or its appurtenances, nor the well-equipped hospital, but the man or men engaged in the work,

which counts in the results accomplished. I saw with Prof. Pick and his assistants a large number of most interesting cases, and great pains were taken to demonstrate many of them to me. Prof. Pick does not live in the hospital, but visits it twice daily. He has a large general and consulting practice.

From Prague I went to Baden-Baden to a meeting of the Southwest German Alienists and Neurologists. Here I met some of the best known German alienists and neurologists, among others Kraepelin, Edinger, Hoche, Fürstner, Erb, and Hitzig. The meeting lasted two days, Saturday and Sunday, with two sessions, one morning and one afternoon of each day, and on Saturday evening an informal banquet was given in one of the rooms of the "Conversationshaus."

The papers and discussions at this meeting were all of a high order. I observed one notable departure from American methods at similar meetings. While each member who presented a formal paper had with him what appeared to be his manuscript, in most instances he paid not the slightest attention thereto, but gave rather an epitome of what he had to present. The freedom and directness in which the views of various speakers were disputed or contradicted by those who differed either with their methods or conclusions were refreshing, but did not appear to provoke the least feeling of personal animosity. By far the majority of papers were clinical studies, although some of the papers, notably one by Nissl, another by Edinger, and one by Kraepelin, were upon the results of laboratory work.

From Baden I went to Heidelberg, where I spent a week, returning again on my way south from Giessen for a stay of several days. The Heidelberg clinic is old, having been opened in its present building in 1878. It consists of a central building as at Kiel and Giessen for offices, laboratories, and lecture halls, etc., with wards running to the right and left. There are also wings running at right angles, and to the rear, connected by a covered corridor, are pavilions for the excited patients of each sex. A view of the front of this clinic is given in Plate LVI, which may be of interest to those who know of its wide reputation.

Prof. Kraepelin had for his associate and pathologist Prof. Nissl, and in addition three assistant physicians. The duties of these assistants are arranged somewhat as follows: A has charge

of the men's division for six months, and B of the women's for the same period, while C does laboratory or research work, as he finds desirable or necessary in carrying out the work of the clinic. At the end of six months A will go to the laboratory to work up material which has accumulated in his service, or to engage in research, while B takes his turn of duty among the men and C assumes clinical duties among the women. In this way each assistant has, in eighteen months, six months among men patients, six months with the women, and six months for laboratory work or other investigation.

There are also always at work in the laboratories from two to six special students, graduates in medicine, who do a certain amount of ward work, in the way of note taking, clinical and experimental laboratory work, and the like.

I first visited the clinic on a day on which there were no lectures, but Prof. Kraepelin showed me over the laboratories and the museum, which is not only devoted to morbid anatomy, but has a unique collection of the work of insane patients, showing in various ways their mental processes, and having a bearing upon the diagnosis. This work not only consists of specimens of handicraft, but writings and drawings, and even printed books. There is one large work in three or four volumes written by an insane physician, and based wholly upon his delusions.

The micro-photographs made by Prof. Nissl, which are arranged in cases and drawers about the room, and which are used by him to illustrate his lectures upon the normal and pathological anatomy of the nervous system, are particularly fine.

The clinical and pathological laboratory at Heidelberg is small and inconveniently placed. It was in the laboratory for physiological psychology that Prof. Kraepelin was manifestly most at home, and in which he was most interested. It consisted of three medium-sized communicating rooms opening out of the lecture hall. The laboratory was well supplied with apparatus, most of it of Prof. Kraepelin's invention, or modification, for research work.⁴

⁴From this laboratory were issued the well known "Psychologische Arbeiten"—since Prof. Kraepelin's departure for Munich, transferred to that clinic.

In this laboratory studies are made in normal, that is, in healthy persons as regards their "reaction time" as compared with the same observations in certain forms of mental or nervous diseases. Studies in fatigue under normal conditions, and in individuals who have taken alcohol, coffee, tea, etc., are made, as well as other experimental observations in physiological psychology.

This is not the time nor place to express an opinion upon the value of this work or to go into an elaborate explanation of its nature and extent. It is sufficient to say that we can only understand the morbid expressions of nervous activity, however manifested, when we understand and know the normal methods of nervous activity, and that these can only be approached through the methods of the laboratory or physiological psychology, and that wherever there is a collection of cases of mental and nervous disease there is a most inviting field for examination and study in this direction for the purpose of observation and comparison with similar studies made upon presumably normal individuals.

The clinical instruction given at Heidelberg is most thorough. It is conducted upon the same general lines as that given at Berlin and Kiel. In addition to clinical lectures in the lecture hall, to which patients are brought, there are clinical visits to the wards conducted by the director or one of his assistants. These visits are usually made by a class of from twenty-five to forty students. The lecturer passes from bed to bed or patient to patient and discourses briefly upon the characteristics of the case, the changes which may have occurred since the last visit, the treatment to be followed or which is being pursued.

As at Kiel, and subsequently at Giessen, I was struck with the number of patients in bed. Prof. Kraepelin, like Profs. Siemerling and Sommer, having to do almost wholly with acute cases, believes in the "bed treatment," upon which much *pro* and *con* has been written, especially in the German medical periodicals.

I am of the opinion that the practice in all of the clinics I have just named was based too much upon theory and too little upon the recognition of the needs of each individual case. I saw many cases in all of these clinics who I felt would be much better off in the open air. It takes, to be sure, a smaller number of nurses to supervise a ward full of patients in bed, than if half were in bed and half out of doors, but I was satisfied that the general appear-

ance of many pale, anæmic looking patients, and their general condition of body health would have been vastly improved by a few hours morning and afternoon in the open air and in the sunlight. There were other considerations looking to the unfortunate habits of some of the patients which it seemed to me would have suggested that they were better up and dressed.

I saw here, as at Kiel, patients of both sexes undergoing prolonged baths. These baths were given to control excitement, to treat bed sores, especially in paretics (some of whom I saw sleeping in the bath), and are in many instances of great value.

In addition to the clinical lectures and visits, Prof. Kraepelin gives on stated days didactic lectures on general psychiatry and upon insanity in relation to law and crime, forensic psychiatry.

I left Heidelberg impressed with the scientific zeal and enthusiasm of the director of the clinic and with the value and importance of his work and the great care taken in the accurate clinical study of cases and the recording of observations made.

From Heidelberg I proceeded to Frankfort-on-Main, where I saw Prof. Edinger, whom I had met at Baden, and he afforded me every opportunity of seeing his laboratory and the anatomical theater. The laboratory is simply furnished and constructed, but it attracts students from all over the world. Prof. Edinger himself is a most genial and attractive man, and did everything to make my visit interesting. He placed his entire collection of microscopical preparations at my service and personally showed me interesting details in some of the slides.

He took me into the anatomical theater and exhibited to me many things not only of scientific but historical interest. He kindly gave me a line to the director of the Asylum for Insane and Epileptics of Frankfort, where I spent a very interesting day, under the guidance of Dr. Sioli, the director. This asylum has about three hundred and fifty patients and an annual admission which, during the previous three years, had been four hundred and fifty-six, five hundred and eleven, and six hundred and twenty-two patients, respectively. This indicates very active work and keeps the small medical staff of the asylum fully occupied. There are three regular assistants and two volunteer assistants, physicians who work in the hospital for the clinical opportunities afforded. One of the assistants, but recently appointed, is a woman,

the first, I believe, in a German asylum. Dr. Alzheimer, the senior assistant, is the pathologist and also gives a tri-weekly course of lectures on the acute psychoses, illustrated by clinical material drawn from the wards of the asylum.⁵

The medical records were well kept and the histories well taken. The laboratory seemed deficient in apparatus and was not well situated, but the work which Dr. Alzheimer has done there has been a distinct addition to scientific psychiatry. I saw while at this asylum an autopsy upon a patient who had died that morning. It was most thoroughly performed and the comments made upon the condition shown macroscopically were of great interest.

Leaving Frankfort, I went to Giessen. I fortunately found Prof. Sommer at home and spent several days inspecting the clinic, listening to his lectures, examining the collection of illustrative photographs, charts, and drawings in the lecture hall, and investigating the apparatus and methods pursued in the laboratory. The clinic at Giessen consists of a central administrative building in which are laboratories, the rooms of assistant physicians, the office of the director, the lecture hall, rooms for out-patients, and a work room under the charge of a skilled artisan, where apparatus is repaired and new apparatus constructed. There are in addition, on either side, four separate structures for patients, one for the reception of new cases and for quiet cases, one for restless and suicidal patients, and one a single-story pavilion for excited cases. There is also on either side a separate building for private patients of either sex. There is in addition a central kitchen and a laundry and heating plant, and a commodious dwelling with tastefully laid out grounds for the director. The clinic at Giessen, like the ones at Kiel and Heidelberg, is at the extreme end of the town; beyond the Giessen clinic are open fields, and to the right as one faces the buildings lies the open valley of the Lahn. Opposite the clinic on the same street is the hygienic institute,

⁵ Since my visit to Heidelberg and Frankfort, Kraepelin has been called to Munich to direct the newly erected clinic there, being succeeded at Heidelberg by Nissl. Alzheimer has been selected by Kraepelin to assume at Munich the duties performed by Nissl at Heidelberg. The reputation which Alzheimer has already attained, and his excellent work in arteriosclerosis, and studies of neuroglia, promise well for the future of the Munich laboratory and clinic.

and one or two squares nearer the center of the town lies the new medical clinic. These three institutions are all lighted by electricity from the plant of the medical clinic. The psychiatric clinic is surrounded by spacious grounds very effectively laid out and planted with trees, shrubs, and blooming plants. The outlook in every direction from the buildings and grounds over the valley and to the distant hills, some of them crowned with ruined castles, is most attractive.

The first floor of the main or central building is occupied by waiting rooms for out-patients, a porter's room, two or more spacious rooms which are used for out-patients, with all the modern apparatus for testing reflexes, disturbance of sensation, or motion, impaired vision, etc. Prof. Sommer is especially interested in physiological psychology, and in the laboratory devoted to this subject has conducted many valuable investigations. The apparatus, much of it very ingenious, is largely constructed after his own designs. On the second floor is the lecture hall, laboratories for clinical, pathological, and research work, the medical library, and the director's private office, which, as at Kiel, communicates with the lecture hall. Dr. Sommer is at present also the dean of the examining board of the university. Much work has been done at Giessen in photography and there is a large collection of lantern slides of pathological specimens, and of patients as well, and numerous stereoscopic photographs. Dr. Sommer has written a work on the *Methods of Physiological Psychology*, and also one on the *Diagnosis of Mental Diseases*, and Dr. Dannemann on the *Construction and Organization of Asylums*. Dr. Alber, the second assistant and pathologist, has also brought out an atlas of photographs to illustrate Prof. Sommer's work on *Diagnosis*.^{*}

Dr. Sommer, Dr. Dannemann, and Dr. Alber each take part in the lectures given at the clinic. The laboratory methods do not differ materially from those at Heidelberg. There are one hundred beds in the clinic, and the annual admissions are between two and three hundred. Among the patients in the excited pavilion I saw two or three criminals sent there for observation and report.

The methods at the clinic can perhaps best be illustrated by

^{*}There is regularly issued from the clinic the "*Beiträge zur Psychiatrischen Klinik*."

what I saw in the case of one patient. He was admitted on Tuesday afternoon and was examined and the history of the case taken by the third assistant. I was present and followed the methods of examination. On the following Thursday morning I went through the entire clinic with Dr. Sommer on a clinical visit. When we reached the pavilion where the new patient was, he was brought into a room set aside for the examination of patients, on a bed. The assistant who had taken the history then read the notes of the case and then Prof. Sommer took up the examination and dictated from time to time points which had been omitted or had not been made sufficiently prominent, or corrected the observations made by the assistant. Then everyone in the room, myself included, took the patient in turn and expressed our opinion or lack of opinion as to the diagnosis. The director entered into a brief discussion with each one in turn as to his views and in the end in this particular case left the diagnosis open as between hysteria, toward which the first and third assistants leaned, and organic brain disease, which all of us felt possible, but not clearly made out. This patient removed, another was brought in, and so on until all of the new cases were seen.¹

Prof. Sommer is an active genial gentleman and seems pleased to place before visitors all the resources of his institution. He stands very well with the Government and I was informed by residents of Giessen, seemed to be able to get anything he asked for in the way of financial support. This ability and the fact that others in similar positions have not been as fortunate in their appeals has caused some jealous feelings to arise.

From Giessen I went to Strassburg, where I spent a short time at Prof. Fürstner's clinic. This consists of a department of the large hospital and forms one of a group of several buildings, contiguous to each other and near the old fortifications, devoted to various departments of medicine and surgery. Prof. Fürstner kindly went about with me on the second day of my visit and gave me the advantage of a special clinical lecture on several very interesting cases. His senior assistant, Dr. Hoche, has since been called to Freiburg, to take the place of Prof. Emminghaus, who

¹The methods of Prof. Sommer are to be studied in detail in his work "Diagnostik der Geisteskrankheiten."

had been compelled to give up his duties by reasons of serious ill health, and who had just been taken away for treatment when I visited Freiburg. The lectures being given when I was at Strassburg clinic were: Mondays, 6.30 to 8 p. m., Special Psychiatry; Wednesdays, 5 to 6 p. m., General Psychiatry. Psychiatric clinics, Mondays, Wednesdays, and Fridays, 5 to 6 p. m. Diseases of the Spinal Cord with Demonstrations, Tuesdays and Thursdays, 5 to 6 p. m. Work in the laboratory, Monday to Friday morning, under Prof. Hoche. The lectures and clinics were public, but the laboratory work was for special classes only.

The Strassburg clinic is old, not conveniently arranged, and the immediate surroundings not pleasant. I saw a few patients out of doors, but the area available for out of door exercise was limited and shut out from the surrounding view by high buildings and walls. The library of the clinic was large, but the laboratory lacked sufficient space. At Freiburg, in Baden, I saw little at the clinic of note. It is an old overcrowded building and quite out of date. At the time of my visit the administration of the hospital was crippled by the illness of Prof. Emminghaus, the director. I did not see the senior assistant, but was shown about by one of the juniors. There is a lecture hall here, supplied with admirable charts, models, and drawings, and some large photographs of patients in characteristic attitudes. There is also a Zeiss projection apparatus adapted also to micro-photography.

From Freiburg I went to Zurich, where my first call was made on Prof. Gaule the physiologist. He gave me the run of his laboratory, and both he and his assistants took great pains in showing me pieces of unique apparatus employed in physiological study. On the Sunday before I left home, Prof. Gaule had visited Sheppard and inspected our wards and laboratory. He had in the conference room given the assembled staff a talk of considerable length on his experiments on the effects of high altitude on the blood and on blood-pressure. For the purpose of these investigations he had made two balloon ascensions and since I saw him in Zurich he has made a third.

The insane hospital of Zurich, Burgholzli, has between three hundred and fifty and four hundred patients (December 31, 1900, 391; December 31, 1901, 360), and an annual admission of from two hundred to two hundred and fifty patients.

The medical staff of the hospital consists of a medical director and three assistant physicians. The director and senior assistant hold positions in the university, and lecture on insanity there, and at the hospital. The hospital dates back to the early sixties, and was constructed under the direction and somewhat after the plans of Griesinger, who held the chair of psychiatry at Zurich, from 1860 to 1864, when he was called to the clinic at Berlin. The buildings do not differ in their external appearance from that of the state hospitals erected in this country at about the same period. Internally there is more space given to associate dormitories than to single rooms, and the furnishing is quite meager as compared with our better state hospitals. Prof. Bleuler took me over the entire establishment and showed me under reconstruction some pavilions for excited cases which were very well arranged and will be, when finished, a great improvement on the conditions now in existence.

The teaching of mental and nervous diseases is divided at Zurich, Prof. Monakoff holding the chair of neurology and neuropathology. His clinic and laboratory attract a considerable number of foreign students, more indeed than the psychiatric clinic.

Going from Zurich to Paris, I visited La Salpêtrière and again saw the famous hospital, the site of Pinel's reforms in 1792, when he unchained the unfortunate insane there confined, and inaugurated simultaneously, with Tuke of York, England, but unknown to him, the era of humane treatment of the unfortunates. The Salpêtrière is a vast establishment giving shelter to some five thousand people, counting inmates and employees. It is exclusively for women, as Bicêtre is for men. There are wards for nervous diseases, for the insane, for sick, for surgical cases, for aged paupers, and for idiots. This hospital has been the field of much of the scientific work in psychiatry and neurology of Paris; and the publications which have issued from it and are still issued, and many of them of great value. Here Charcot made his name famous as a teacher of clinical neurology and the museum of casts, drawings, engravings, photographs and of anatomical specimens which he collected, is as grand a monument to his memory as the bronze statue in his academic robes, which stands before the entrance of the hospital in the shadow of the more pretentious monument to Pinel. Much good work and excellent teaching is

done at the Salpêtrière, and I came away from Paris with a strong desire to spend a few months rather than a few days within the walls of some of her hospitals.

I returned to London in time to visit Dr. Mott, and the laboratory of the London County Asylums at Claybury, and to run up to Edinburgh to the laboratory of the Scotch asylums, thence to Liverpool for a meeting of the British Medico-Psychological Association. The London County Council which through committees manage all of the asylums for the insane poor of London, some twenty thousand, has established in connection with the large asylum at Claybury, a laboratory under the direction of Dr. F. W. Mott for all the asylums, somewhat after the plan of the New York State Laboratory now connected with the State Hospitals on Wards Island, but intended for the benefit of the whole state hospital system. The Claybury Asylum has some two thousand patients under a medical superintendent, Dr. Jones, and six assistants. The committee of the county council is not a permanent committee and its members necessarily have no ideas of the principles which enter into hospital management. The superintendent at Claybury is handicapped by the same conditions which are responsible for the serious condition of affairs recently revealed in one of the asylums, under the control of the county council.*

The laboratory is a detached building with rooms set aside for pathological work, for microscopic study, for chemical work, and there is an attempt being made to fit up a room for physiological-psychology, some apparatus being already installed. Dr. Mott has been making a very interesting and valuable series of studies upon degeneration of nerves, necessitating the performance of certain experiments on animals. The anti-vivisection craze has taken such a hold on the English mind that numerous obstacles in the way

* Divided responsibility, no central authority backed by that of the governing body, a medical staff and subordinate officers responsible to the Council and therefore independent of the Superintendent, can but result in insubordination, in half-hearted obedience to the medical chief, or open contempt for his wishes, and as a consequence while the laboratory under Dr. Mott is all that could be desired, and the opportunities for good clinical work, in conjunction with the laboratory studies most excellent, such work is not forthcoming, and is not to be expected until the Council changes existing conditions.

of laws have been placed on the statute books which seriously interfere with perfectly legitimate and humane experiments. Dr. Mott has no license to undertake experiments on living animals, not even upon rats and mice, and the committee of the council having one member who is a strong anti-vivisectionist who controls the other members, Dr. Mott in consequence, is compelled to ask another man who has a license to do his experimental work for him while he looks on.

Entering the laboratory, the room to the left is the library and the director's office, to the right is the chemical laboratory and beyond a store room for chemicals and apparatus; back of the chemical laboratory is a long room well lighted from the north for the use of microscopes, adjoining which is a room for microphotography, and a dark room. Beyond these to the left is a room for section cutting, a large room for anatomical specimens and an autopsy room, and in front of this the room to be devoted to experimental psychology, which can also be used for lectures and demonstrations.

I was particularly interested in the chemical laboratory and in the results of some studies of the blood in degenerative brain and nervous diseases and of the blood and urine in epilepsy. If this chemical laboratory with the capable chemist now in charge, could work in conjunction with well observed cases in the wards, I believe much of value would result. There is some talk, I believe, of building a small detached observation ward and placing there competent medical men to work directly in conjunction with the laboratory workers.

Leaving London one Saturday night I spent Sunday at the Crichton Royal Institution, Dumfries, with Dr. Rutherford. This is a mixed asylum receiving both public and private patients, but keeping the two in separate buildings and with distinctly different standards of care. There are in connection with this institution three separate cottages in the immediate vicinity of the main building accommodating from four to twelve patients each and since the visit I paid the institution in 1896, Friars Carse, the home of Mr. and Mrs. Crichton, who founded the institution, has been purchased. This house, is part of it, very old, having been part of an old priory. The mansion is eight miles from the institution and is looked after by a lady matron, who with two or three nurses

care for the four to six lady patients who reside there. A staff of house servants look after the cooking and care of the rooms. The grounds of this mansion are very spacious and beautifully laid out. I had in addition to the visit to the Crichton Royal Institution in 1896, twice before been Dr. Rutherford's guest, once in 1882, at Lenzie where he had organized the Barony Parochial Asylum of Glasgow, and for years conducted it on the open door principle, and again at Dumfries, in 1890.

Dr. Rutherford translated Griesinger's work from the German for the New Sydenham Society in 1867.

On Monday I went on to Edinburgh and again visited the Morningside Asylum, which I had seen in its old condition in 1882, in the process of reconstruction in 1890, and completely transformed in 1896. The central note of the new Morningside Asylum is its grand hall from which open on either side the wards for men and women. This hall occupies two floors in height and is built to resemble a grand baronial hall of some ancient castle. It is so spacious that its height is not remarked. On either side are large open fire places and from each end open billiard, card, reading, and writing rooms where patients can withdraw from the general assembly in the larger hall.

This hall is used as the general reunion room every evening and is open to any who wish to go there when in-doors during the day. On either side of this hall is a hallway one for men and one for women leading to the dining rooms which are just back of but entirely cut off from the hall. These dining rooms are divided so as to accommodate but few patients in each one, and each dining room communicates with the common service pantry which is just over the kitchen which is in the high basement below, an arrangement which is made possible by the fall of the ground level. On the same level with these dining rooms but approached from a private entrance is the dining room of the assistant medical staff. Dr. Clouston like Dr. Rutherford has his own house on the grounds. I visited the kitchen which is most conveniently arranged and is supplied with apparatus of the most modern kind. The cooking is done by gas or steam. From the level of the kitchen floor a tunnel passes to the detached villas, to the hospital buildings, there being one for each sex, and to the pavilions for noisy patients. The food is carried to these on a tram-way in a

tight, rapidly moving car and there are ward kitchens with small gas ranges in each of these buildings, but the patients welcome the time when they can return to the main dining rooms, and the physician, matron, and chef all told me that the difference in waste and economy in serving in favor of the central kitchen and contiguous dining halls was very great.

Dr. Clouston whose well known work on Mental Diseases has just reached its sixth edition, is professor of Mental Diseases in the Edinburgh University, and was for a long time one of the Editors of the *Journal of Mental Science*, the official organ of the British Medico-Psychological Association.

While in Edinburgh I visited, and saw the work of the laboratory of the Scotch asylums, under charge of Dr. Ford Robertson. This laboratory is supported by contributions from the several Scotch asylums and does for that part of the United Kingdom what the laboratory at Claybury does for the London asylums.

Dr. Robertson has an assistant as has Dr. Mott, and graduates and advanced students are permitted, under certain restrictions, to work in the laboratory under the supervision of the director. Dr. Robertson has written a work of much value on the Pathology of Insanity and was engaged at the time of my visit in studies in the bacteriology of certain conditions associated with insanity, notably in paresis. Dr. Watson, a volunteer assistant in the laboratory was pursuing some very suggestive and interesting work in comparative neuro-pathology, and seemed to be in the way of throwing some light on the causes of arterio-sclerosis.

I do not think that any one of sufficient experience and observation in the care of the insane and the conduct of institutions for the insane, to be able to judge, could visit the institutions which I have referred to, and which I saw without being struck by a notable contrast between the public hospitals of continental Europe on the one hand, and those of Great Britain and the better state hospitals of this country, on the other.

In Germany the smaller institutions and especially those more recently constructed, are more simple in their style of architecture, less elaborate in their general arrangements, than are the older and the larger institutions of which Daldorf near Berlin, the Municipal Hospital in Frankfort, and the hospital near Zurich are examples, and much more so than are many of the better

known hospitals and asylums of Great Britain and the United States.

It must not be understood that these small institutions, the ones at Kiel or Giessen for example, are erected without great attention to detail in construction and arrangement or that they are the simple and inexpensive structures which some who have read of them or heard them described seem to believe.

No one can talk with Prof. Sommer at Giessen, who is familiar to the most minute detail with the plans and arrangements of that clinic, its furnishing and equipment, without being at once convinced that he felt it necessary in the work which he proposed to undertake to have a hospital constructed upon lines which should make it easy of administration and as perfect as possible in those details which tend to make the many and somewhat intricate affairs of hospital management move smoothly and harmoniously together.

Kiel and Giessen may be taken as examples of recent ideas in small hospitals or clinic construction, and in many respects resemble each other.* Each has a central administration building in which are the offices of the medical director, the apartments of assistant physicians, rooms for the reception and examination of patients not resident in the clinic, laboratories, library and conference rooms, and a lecture hall. On each side of this, attached at Kiel, detached at Giessen, are wards for quiet patients and reception wards for new cases and at each there are detached buildings for pay patients and for the excited cases. All of the details, even to materials for floors and walls, have been carefully thought out under medical direction and in every respect the arrangements as originally planned were such as met the approval of the medical director and seemed to him best adapted to the situation. At Giessen even the furniture was constructed under the director's supervision and from models he had had constructed. Dr. Sommer showed me some of these models with much pride. I did not find the arrangements and construction of the clinics in every respect such as would be approved in this

* Since my visit to these clinics the new clinic at Munich, erected at a cost of over half a million dollars, to accommodate about 100 patients, has been opened, and Prof. Kraepelin has been called to its directorship.

country even for public patients, and for private patients they would not meet by far the demands of the day. We must remember, however, that these institutions are built for people whose manners and customs differ in many essential details from our own, and for them they seem to meet very well the requirements.

The buildings at Kiel though not fire proof are very substantially built, with, as I have said, somewhat particular attention to minute details of construction which would only be thought of by one versed in the necessities of hospital care and administration and construction. The cost of these buildings is fully up to the cost of somewhat elaborate fire proof structures in this country when one takes into account the differences in the price of materials and labor. The average cost of all of the buildings at Kiel was about thirteen cents per cubic foot. The cost per bed was slightly over \$2235.00. The cost of similar construction in this country would be little if any more and with a proportionate larger expenditure represented solely by the differences in the price of labor, fire proof construction, more modern plumbing and greater attention to detail in finish would have resulted. The grounds surrounding the clinics at Kiel and Giessen, and I take these two as examples of the recent trend of opinion in hospital construction in Germany, are tastefully laid out, and planted with shrubs and trees evidently under the direction of a careful and tasteful landscape gardener. When therefore we are told or it is intimated that the newer German psychiatric clinics are simply and inexpensively built and with little or no attention either to architectural effect or exterior adornment in the way of pleasure grounds and the like we are asked to believe something which is contrary to observed facts.

When one takes into account the differences in the general construction of buildings, and the manner of living in continental Europe and the methods of this country and Great Britain we can safely say that as much attention is paid to what some critics of our hospitals and asylums are inclined to call unimportant details, in Germany as in America or England.

The remarkable contrast to which I refer is not, therefore, in the material structures in which hospital work is carried on, but in the nature of the work conducted and in the point of view from which patients are regarded.

It has been asserted that with the completion of the clinic at Kiel, every university town in Germany has a psychiatric clinic. Now these university towns are not by any means, all of them among the most populous or most important towns of Germany, nor is the territory surrounding them more thickly populated. Kiel has a population of 98,000, Giessen of 23,000, and Heidelberg of 35,000, and there is no more demand in these towns and others which I could name for a clinic for the immediate and convenient care of the insane than in many other towns and cities and not so much as in several. The location of these clinics in university towns cannot, therefore, be explained solely or largely upon the plea of greater necessity. The object and the admitted object is to afford material for teaching psychiatry to students and material for study and observation on the part of professors connected with the universities. This being true one is not surprised to find that patients are regarded and to some extent seem to regard themselves as "mere cases" for demonstration and study. I do not mean to imply for a moment that the directors of these clinics or their assistants are callous and indifferent, but I do assert that the rights and feelings of patients in the clinics which I visited are not as thoroughly regarded as in Great Britain or in this country. Part of this is due no doubt to the fact that the majority of the patients in these clinics, in some of them all, are paupers, that doctors and nurses on the one hand and patients on the other, are influenced consciously or unconsciously by the spirit of militarism which pervades Germany, and impresses upon the so-called lower orders respect for position and authority which is certainly not observed on this side of the water.

I am unable to assert that the patients resented being taken before classes or having classes brought to their bed-side nor do I think that any were materially harmed by the excitement or possible embarrassment resulting. Some seemed to enjoy it, but the reasons for the pleasure excited were of a kind associated with the ideas of the patient which were in consequence made more prominent and possibly dominant.

The thing, therefore, which strikes the student in visiting the German psychiatric clinics is the care and zeal expended in the study of cases and in the study of the general and special problems of psychiatry.

In the first place, and of prime importance the preliminary training and medical education of the German physicians whom I met and who are engaged in the study of psychiatry generally, has been conducted on a different plan from that pursued either in this country or Great Britain. In consequence the medical officers of the German psychiatric clinics are better equipped to undertake strictly scientific studies than are the majority of physicians in like positions in this country or indeed in Great Britain. Then, moreover, the psychiatric clinics are as I have pointed out, associated with universities and their directors, and in some instances assistant physicians are members of the teaching body of the universities, and by reason of contact with the university staff and the knowledge that some at least of their work will be reviewed by their colleagues, are stimulated to their best endeavor.

In the larger hospitals for the insane to which the clinics transfer their chronic cases and those whose convalescence promises to be slow, there is less of this spirit of inquiry, less careful study of cases, though much good clinical and laboratory work is done in these institutions.

The study of psychiatry in Germany is comparatively a new field in medicine. It is not many years since the care of the insane in that country was a reproach to the intelligence of the Germans. Heinroth was in 1811, made the first professor of psychiatry in Germany, at Leipzig. He had been a pupil of Pinel in Paris, and was the most earnest advocate of the study of insanity as other symptoms are studied and its introduction in the curriculum of the medical schools. Unfortunately for his plans the congress of Vienna made a new distribution of German territory and the revenues were not available to carry them out. He took up the practice and teaching of psychiatry at a time when there was a very serious necessity for reform in German hospital methods. Reil, whose writings did much to hasten an attempt at reform in Germany, said of the institutions for the insane, "They are mad-houses not merely by reason of their inmates, but more especially because they are the very opposite of what they were intended to be."

The German institutions under the force of enlightened views upon insanity gradually improved, but any one who will take the

pains to read the account of the visit of the late Dr. Pliny Earle to German asylums in 1849,¹⁰ will at once realize the great advance which has been made since that time.

Conolly, in 1839, had abolished mechanical restraint at Hanwell, and his example was being widely imitated in Great Britain, and yet Dr. Earle reports restraint in common use, and restraining apparatus of the most ingenious kind. I cannot refrain from quoting Dr. Earle's naïve comment on a most complex tranquilizing chair which he found in use; he says: "We advance no pretensions to inventive genius, but really it appears as if there were one thing wanting to make the chair just what it ought to be; and this is—to heat it a few hours in the midst of a large and brisk fire." So slow indeed was the non-restraint idea in gaining ascendancy, that as late as 1863, Neumann speaks of it as the "English swindle" and Erlenmeyer in the *Correspondenz Blatt*, for April, 1863, repeats the phrase.

In 1845, the first edition of a work on insanity by Griesinger, entitled "The Pathology and Therapeutics of Psychical Diseases," was published and a man appeared before the medical profession already well known for much good work he had done in the seven years which had elapsed since he took his degree, who was destined to work a revolution in German psychiatry. The time it is true was ripe. The disciples of Pinel and the followers of Esquirol in France, and many in England had been teaching that insanity was a symptom, dependent upon physical causes, and that the brain was the organ affected and that insanity was to be studied just as other symptoms were studied, by close accurate clinical observations coupled with post-mortem investigations, and that nothing was to be gained by abstruse discussions from a meta-physical standpoint, as to the action of the mind and the nature of the mental processes.

Heinroth, who was the leader of those who held that insanity was distinctly a spiritual disease, "beginning as vice" had but recently, 1843, died, but his school still had many adherents. Two other leading views were held, one school was called the Somatics,

¹⁰ Institutions for the insane in Prussia, Austria, and Germany by Pliny Earle, M. D., Utica, N. Y., 1853. American Journal of Insanity, Vol. IX, pp. 106-224-305; Vol. X, pp. 1-135.

of whose teachings Jacobi was the most prominent exponent, and the other the Psycho-somatics with Zeller as their leader. It was under Zeller at Winnenthal, that Griesinger had his first experience in the study of psychiatry and the care of the insane, and it was here during the two years of his service, 1840-1841, that he collected the material for the first edition of his work.

Zeller was a man of remarkable force and wide reputation, and he maintained a warm friendship and admiration for his distinguished pupil. While classed as a psycho-somatic, he evidently had a strong belief in the physical basis of insanity. In his writings such phrases as the following frequently appear: "The bodily lesion which lies at the basis of the mental disorder."

Griesinger in an address in 1863 in opening his clinic at Zurich said: "*To determine not merely the character of the mental aberration, but so far as possible, the nature of the lesion of the brain and nerves; this is the real problem for solution, the special business of diagnosis in insanity.*"

In the *Archiv für Psychiatrie und Nervenkrankheiten* No. 1, 1867, he published a paper which marks an epoch in German psychiatry, and nothing that has been done since, has risen above the high mark which he then fixed as the one to be attained.¹¹ He was met with violent opposition and even personal abuse. The leading periodicals devoted to mental and nervous diseases, denounced his views or asserted that they contained nothing new but they outlined the plan now in operation in Germany, and one attentively reading the essay, and comparing it with some published articles and addresses which have appeared during the last five or six years can but wonder if its existence was known to the writers and speakers. Dr. Sibbald the translator in the *Journal of Mental Science*, of the article just referred to, in an article entitled "Psychiatry in General Hospitals,"¹² says: "The position which Germany has made in providing for the clinical teaching of psychiatry is chiefly due to the impulse which Professor Griesinger gave to the movement during the three years in which, before his lamented death in 1868, he filled the chair of Nervous and Mental

¹¹ For a translation of this article see *Journal of Mental Science*, April, 1868. *American Journal of Insanity*, July and October, 1903.

¹² *Review of Neurology and Psychiatry*, Vol. I, No. 1, January, 1903, p. 11.

Diseases in the University of Berlin. I visited Berlin a few years before his appointment, and saw the building attached to the Royal Charité Hospital in which the insane were located, and when restraint and seclusion and all the worst features of the old asylum treatment were rampant. And I remember with what delight I saw the same building in 1867, under Griesinger's régime. The change was like a miracle; and in recalling to mind what I saw there and what I thought of it, I feel that I did not adequately realize how much that great man was in advance of his time; for there was little either in the treatment of the patients, or in the mode of conducting the teaching, that was in any way behind the best that is to be seen at the present day."

The distinguishing feature of the German clinics is their resemblance to a general hospital in methods, and this is the lesson to be learned by those who visit these clinics. All that medical science can offer is brought to bear in investigating the pathological conditions present, both by careful systematic clinical work and painstaking laboratory investigation.

The patients have the advantage of well trained internes, and the fact that their patients are to be the subject of clinical lectures, stimulates these internes to a most thorough study and record of all physical and mental symptoms, lest, when the case is brought before a class, they be found to have been deficient or careless in their observations.

The nursing in the clinics which I visited did not impress me as being up to the standard of the better public hospitals for the insane in this country, nor did the nurses appear to be as alert or intelligent. As to the methods of treatment, aside from the almost universal use of baths and other hydrotherapeutic measures, they did not differ materially from what can be seen in any good hospital for the insane. Prolonged baths, to calm excitement, to prevent or relieve bed-sores in patients were in common use, and with simple, sometimes meager or almost crude methods and apparatus, much was accomplished by these baths. The use of hydrotherapy, and more especially prolonged bathing has had, like many other therapeutic procedures, a curious periodicity. About 1847, Brierre de Boismont,¹³ reported the use of prolonged,

¹³ Mem. de l'Acad. de Med., Paris, 1847.

six to ten hours, warm baths in calming maniacal excitement. He was followed by other writers and observers, and for a time the method was in more or less general use. About 1863-65, attention was again called to the use of prolonged warm baths, with various modifications and again in 1882-83.¹⁴ The period has again come around and a method which has undoubted advantages, and only passed into abeyance because introduced, exploited and used with more enthusiasm than good judgment and discrimination is, or rather has been, for a few years past growing in favor.

The advantage which German physicians have over those whose education is obtained in this country, as regards their training in psychiatry, lies in the didactic and especially the clinical instruction which can now be obtained at all the German universities.

I have already pointed out that the *raison d'être* of the psychiatric clinics in German university towns is not to afford prompt and efficient relief to the unfortunate insane, so much as to afford material for clinical instruction. This object being accomplished the other result necessarily follows, for no patient in any hospital for the insane that I am familiar with receives such careful clinical study as does the patient in the better known clinics, such as Berlin, Kiel, Heidelberg, Giessen, not to mention the many others. Moreover, under the enlightened laws of Germany, his admission to the psychiatric clinic is practically as easy as would be his admission to the neighboring medical or surgical clinic, and such is the public respect for and confidence in the direction of the clinic that questions of improper detention are as unheard of concerning the patients under care for mental disturbances, as they are concerning the patients in any of the other clinics, and the clinics are applied to by patients or their friends with almost equal freedom.

The wish has been expressed by many that clinics of a similar kind might be had in this country; and the statement made that every town of a certain size should have its psycho-pathic hospital.

¹⁴ For an account of the value of permanent bath in the treatment of gangrenous bed-sores in Paretics see *American Journal of Insanity*, April, 1883, by D. C. Rheinhard from *Allg. Zeitschrift für Psychiatrie*, Bd. XXXIX, Heft. 6.

This cumbersome and by no means pleasant sounding title has been proposed with the belief that patients going to an institution with such a title would be relieved, in part at least, from the stigma that is supposed to attach itself to them and their families if they are treated in a hospital or asylum for the insane.

I am decidedly of the opinion that no subterfuge of any sort ever succeeds in preventing the curious, and the busy-bodies of every community, and the yellow journals of a few, from knowing and publishing either by gossip or in print why their neighbors were taken to the hospital and the very attempt to conceal the character of the hospital under some new name awakens suspicion that there is something to conceal about the character of the diseases it treats.

The German clinic is frankly called, *Irren-klinik*, or *Psychiatrische-klinik* (insane or psychiatric clinics) and do not appear to be avoided because of the name. But questions of this kind aside, until the government and the medical direction of the clinics or hospitals it is desired to establish, can be assuredly and forever freed from the baneful influence of politics it will be a hopeless task, bound to dismal failure, to attempt to imitate the German clinics or to approach them in the work which they are accomplishing for the public and the profession. What city for example would be expected to build and make annual appropriations for a hospital or clinic like that at Kiel or Munich, without naming its managing or directing board? What board so named, judging by past experiences, would be likely to appoint the best man to be found, no matter what state or city he happened to reside in, as the medical director and then leave his hands wholly untrammelled as to his staff, and the general direction of the hospital?

Are not the advocates of a clinic in every city of a certain size familiar with the history of the medical and other appointments in many of our state and municipal hospitals? Is the example of Runge forgotten, driven out of a hospital whose internal administration he had reformed and whose medical administration he had made a credit to the city and state, by the demands of party spoilsmen? If anything can be done, until the barbarism of our system of so-called self-government is overcome, it must be accomplished by or in connection with the few universities with associated medical schools and hospitals. In no other way under

present conditions could the tenure of office of the medical director be assured, in no other way could the expectation be raised of the selection of the best available man or men to carry on the work.

The demand for clinical instruction in psychiatry in this country, is a crying one, and those who know the situation and who have

INSTITUTIONS USED FOR CLINICAL TEACHING OF MENTAL DISEASES
IN CONNECTION WITH GERMAN AND THREE OTHER
UNIVERSITIES, A. D. 1900.

Names of Universities.	Wards from part of General Hospital.	Independent of General Hospital.			Classes of Patients provided for in the wards.				Average sojourn of Patients.		Number of Physicians.		Date of Opening.	
		Close to other Cliniques.	Within a mile of other Cliniques.	Beyond a mile from other Cliniques.	Recent Insanity.	Both Recent and Chronic.	Delirium.	Other Nervous Diseases.	Years.	Weeks.	Non-Resident.	Resident.	Of present Building.	Of regular Clinique.
Berlin.....	1	1	..	..	65	..	20	60	..	3	4	3	1798	1865
Greifswald...	..	..	1	..	..	48	..	..	..	48	2	1	1834	1889
Kiel.....	..	..	1	..	..	80	..	..	..	..	..	..	1900	1900
Göttingen.....	..	..	1	..	..	345	..	..	..	66	..	..	1866	1866
Tübingen.....	..	1	..	..	114	..	..	..	..	1	1	..	1894	1894
Rostock.....	..	..	..	1	..	200	..	..	..	45	1	..	1866	1866
Erlangen.....	..	..	1	1	..	857	..	..	..	26	3	4	1846	..
Heidelberg...	..	..	1	..	80	..	..	..	..	21	2	2	1878	1878
Marburg.....	..	..	..	1	..	300	..	..	..	3	2	2	1876	1876
Freiburg.....	..	..	1	..	..	90	..	..	..	1	2	2	1887	1887
Breslau.....	1	..	..	..	215	..	..	..	..	38	2	2	1887	1887
Strassburg...	1	..	..	..	70	..	..	30	..	10	1	..	1886	1872
Würzburg.....	..	1	..	..	60	..	..	..	..	12	2	2	1888	1833
Gießen.....	..	1	..	..	60	..	..	..	..	19	3	..	1896	1896
Jena.....	..	..	..	1	180	..	..	..	..	20	2	2	1879	1848
Leipzig.....	..	1	..	..	130	..	..	..	..	12	4	4	1882	1882
Halle.....	..	..	1	..	100	..	..	25	..	9	2	2	1891	1891
Bonn.....	..	..	..	1	..	600	..	20	..	1	15	3	1882	1882
Königsberg...	1	..	..	..	30	..	10	..	..	7	2	1	1879	1892
Munich.....	..	..	..	..	..	590	..	..	..	12	2	5	1850	1861
Vienna, 1.....	..	..	..	..	..	800	..	..	..	44	3	5	1853	1853
Vienna, 2.....	1	..	..	..	130	..	..	..	..	4	5	3	1784	1875
Prague.....	..	..	..	1	158	..	..	..	..	13	1	2	..	..
Copenhagen..	1	1	..	..	54	..	..	..	..	3	1	..	1888	1882

seen what is done elsewhere long for the day when the material all about us may be made available, a day the dawn of which will be for the lasting benefit alike of the insane, and of those who would study and treat their maladies.

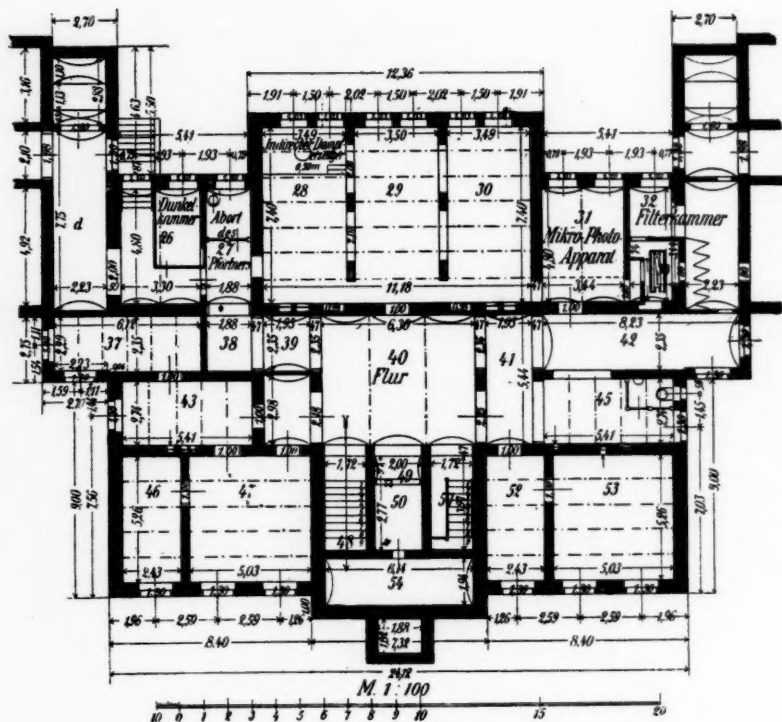
To confess that that dawn seems far off, and that it is delayed by the clouds of political ignorance and political vice which over-

shadow so many other things which might work for the healing of the nation is humiliating, but the truth compels the admission.¹⁸

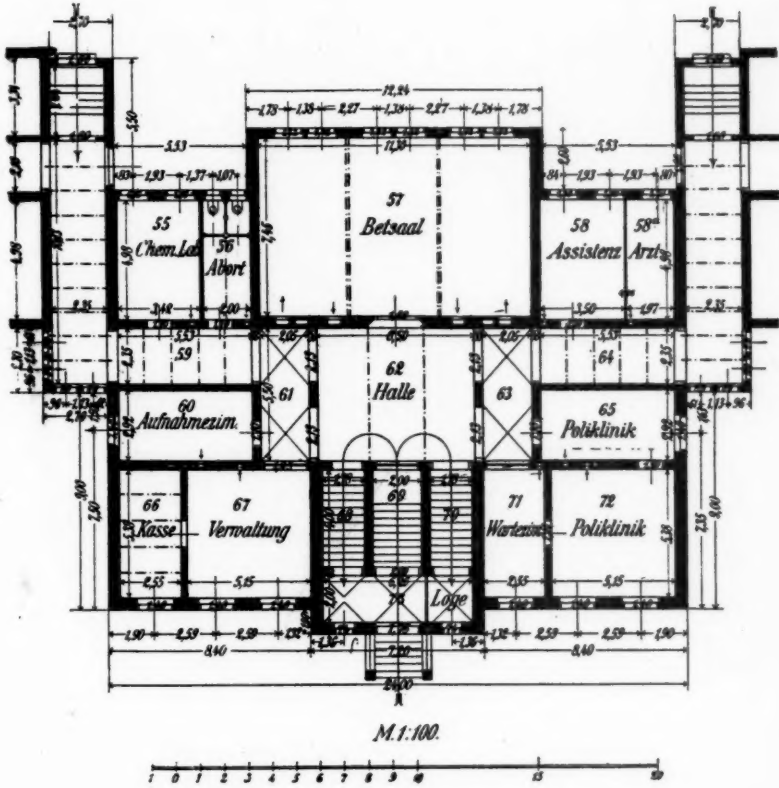
The foregoing table, taken from Dr. Sibbald's article in the *Review of Neurology and Psychiatry* (Vol. I, No. 1, January, 1903), is reproduced as giving in a concise form information as to the work and character of the German psychiatric clinics. The reference to Kiel in the table is slightly incorrect as it provides for one hundred and thirty-nine, rather than eighty patients, and was not opened until the autumn of 1901. Heidelberg also has over one hundred beds. Since the table was published the new clinic at Munich has been opened under Prof. Kraepelin, as stated in the foregoing pages.

¹⁸ Read by title at the Sixtieth Annual Meeting of the American Medico-Psychological Association, St. Louis, Mo., June 2, 1904.

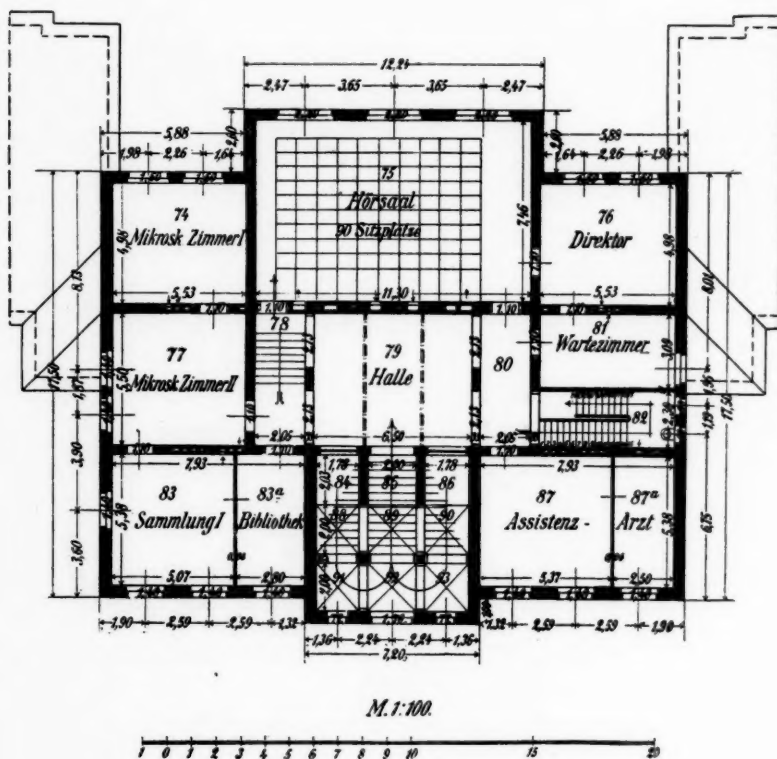




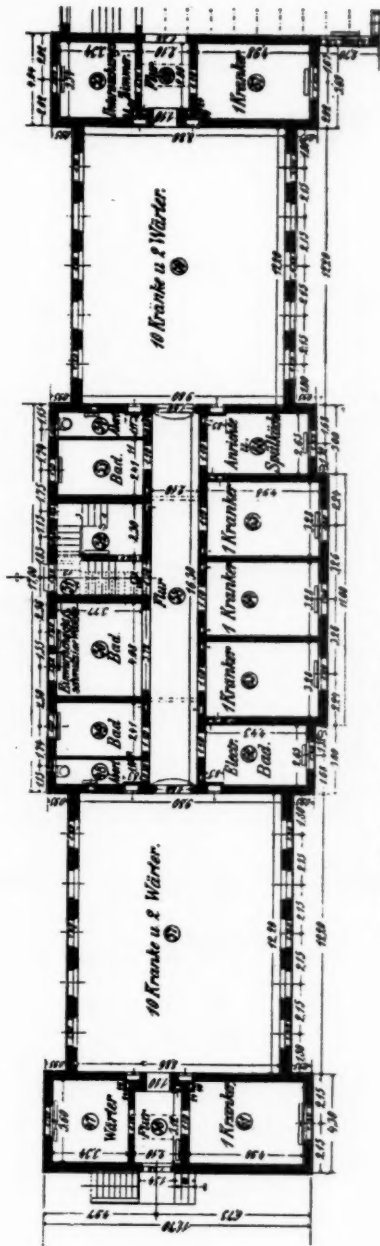
KIEL.—BASEMENT PLAN, ADMINISTRATION BUILDING.



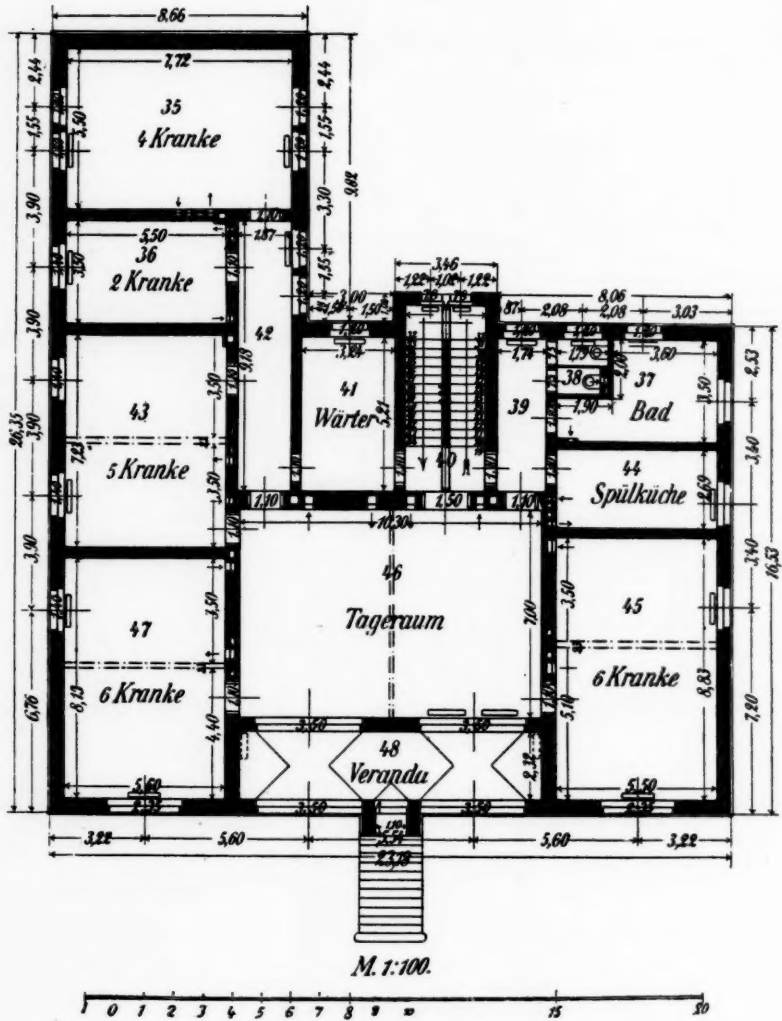
KIEL.—GROUND FLOOR, ADMINISTRATION BUILDING.



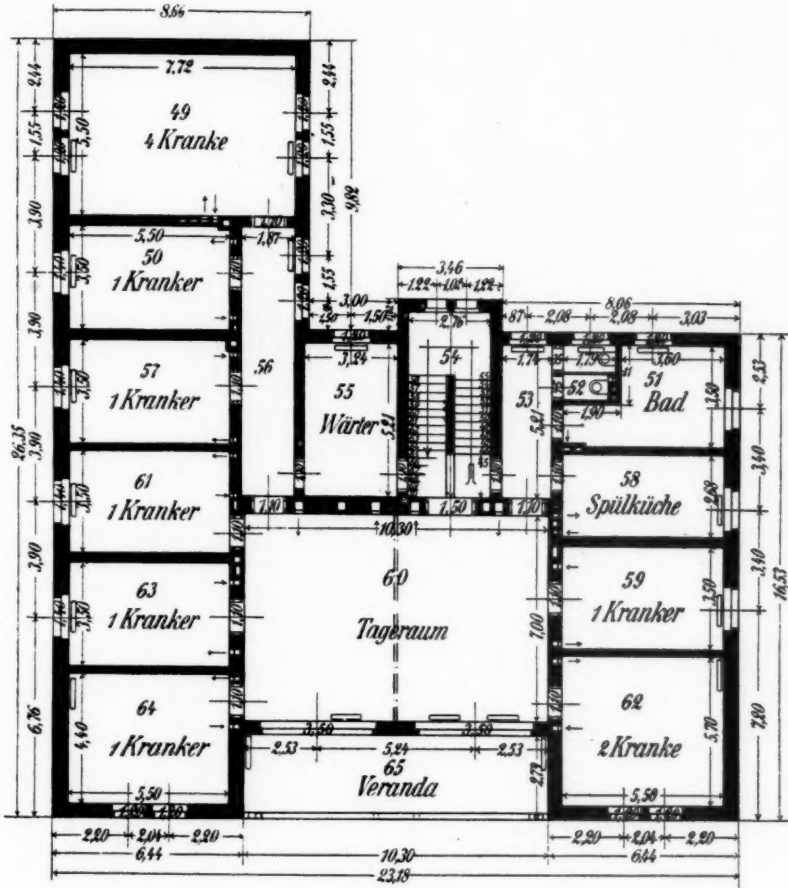
KIEL.—SECOND FLOOR, ADMINISTRATION BUILDING.



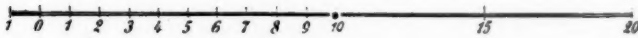
KIEL.—WARDS ON EITHER SIDE OF ADMINISTRATION BUILDING.



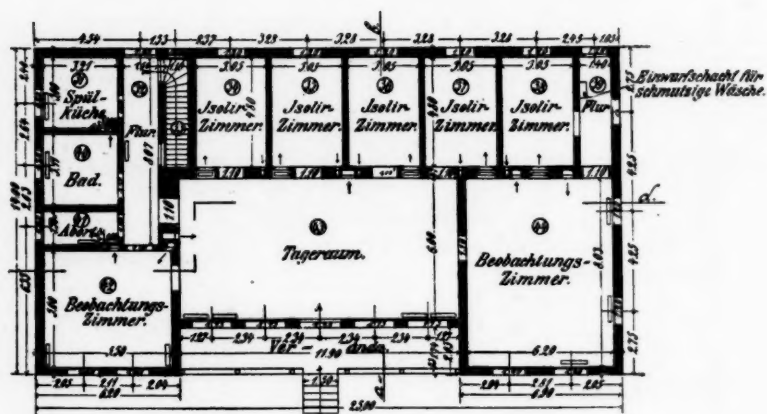
KIEL.—VILLA, GROUND FLOOR.



M. 1:100.



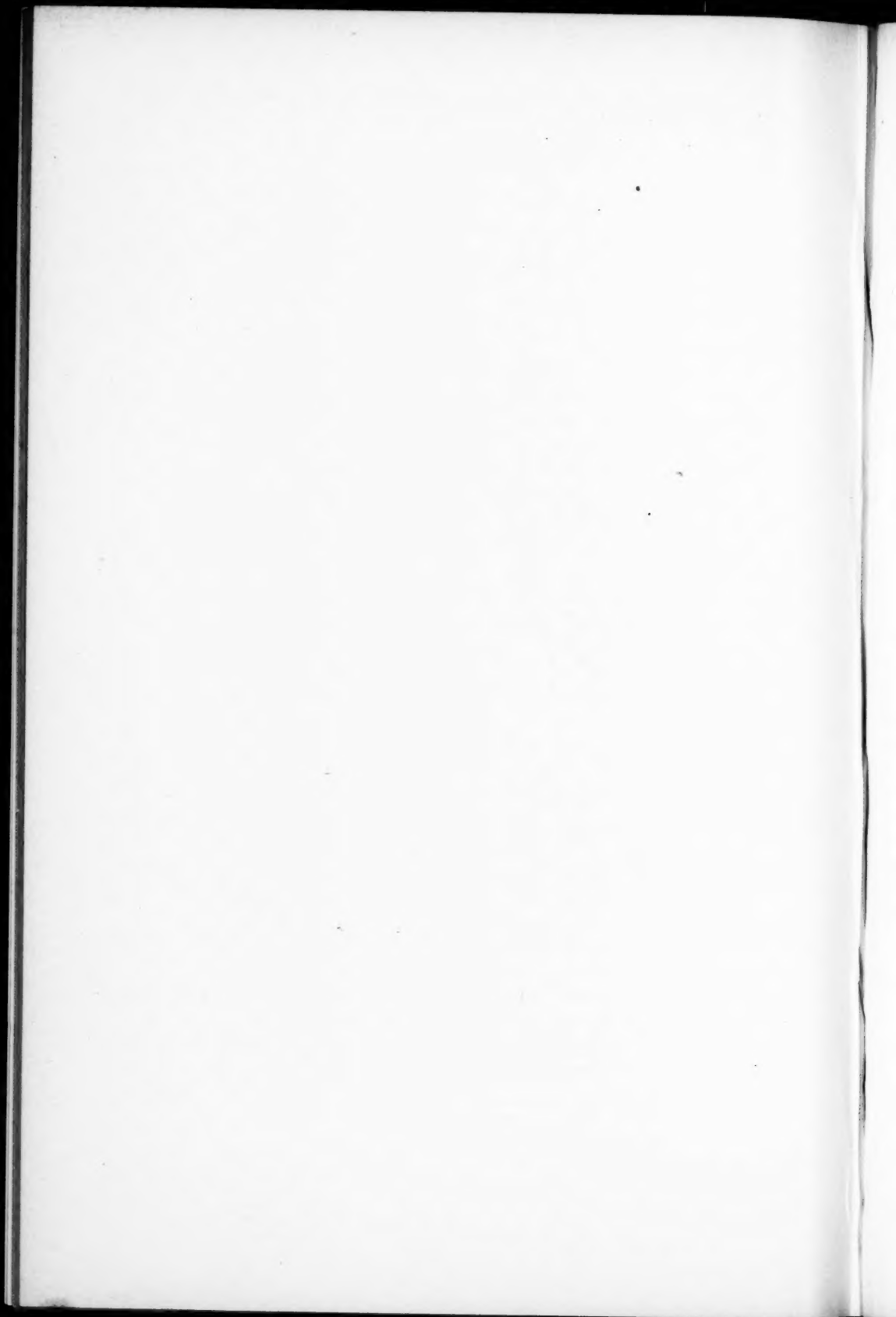
KIEL.—VILLA, SECOND FLOOR.



KIEL.—ISOLATING WARD.



HEIDELBERG PSYCHIATRIC CLINIC.



FUNCTIONAL INSANITY AND ITS RELATION TO ALLIED NEUROSES.

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It requires courage, if not daring, to advance at this stage of neurological research and knowledge—the view that many of the morbid mental conditions known as insanity are functional, and that therefore there are diseases of function as well as of organs. I expect this theory to meet with much adverse criticism—possibly with a severe rebuff. For these I am prepared, but to avoid misapprehension I request permission at the outset to define my terms—always a risky procedure, for it is said that by defining one erects an idol with special qualities and which invites by these qualities its own destruction. It is also said that the idol of to-day becomes the object of contempt tomorrow. Definition is, however, a convenience, for only by this means can we group allied symptoms, note their relations and sum up our knowledge.

By function we mean the work done by or the action of any organ or set of organs, and among these organs we include the “independent protoplasmic unit”—the neurone. The work of these neurones varies in quality and intensity. Their energy can vary with a suddenness which appears to preclude any organic change. We know, and it is proved both by experience and disease that the various organs of the body receive their direction, tone, and support through the neurones from the central nervous system, and although we are accustomed in disease to find structural alterations which account for the morbid phenomena, yet nature may, on occasions, experiment in so subtle, fine and obscure a manner as to alter the function without leaving any evidence of definite or appreciable change in structure. We meet with both men and women at all ages whose lives are a misery to themselves, a cause of distress to their relations and who suffer from perverted sensations or anæsthesias, paræs-

thesias, and dys-æsthesias, from pains or algesias, from loss of power or paresis, from various affections of the sense organs and even from mental abnormalities, yet who have no discoverable nervous lesions to account for these symptoms, and whose lowered vitality and consequent incapacity can only be described as "functional."

These functional diseases—also termed dynamic or vital as opposed to those of a physical or material character—are in contradistinction to organic or lesional diseases. We are acquainted, for instance, with tumultuous cardiac disturbances following upon a shock of surprise or associated with emotions of fear; with respiratory disturbances—familiarily described as "taking the breath away"—after startling sensations. We find albuminuria without disease of the kidneys, and mental perversion accompanying bodily disorders, without any definite structural brain disease. The mental irritability and the impulsiveness of cardiac (more especially of aortic) disease, the buoyancy and hopefulness evidenced in cases of tubercular phthisis and the different mental states accompanying digestive troubles or disorders of nutrition are so well known that the maxim "The stomach rules the world" is a true word spoken in jest. I need but refer to the mental states associated with gout and other metabolic changes to emphasize my theory that there are many and varied mental abnormalities without definite structural brain lesions, *i. e.*, that there are diseases of function as well as diseases of organs.

As to the definition of insanity, it is not in itself a disease, but a symptom which may be due to many different morbid conditions. It had been defined negatively as a condition opposed to sanity, and this is the view we shall adopt as being sufficiently comprehensive to include every variety. We know that the standard of mental health is a variable one, so much so, that one may safely say that nobody is always sane. The age of the individual, the period in which he lives and the class of society to which he belongs all have to be considered. There is a different standard of mental health, as possibly there is of honor and morality and certainly of custom and social usage for each class of society and in each social *stratum*, and therefore so many different degrees of insanity; so that insanity becomes a

want of conformity with an artificial code. We know, however, that the social regenerator, the man of genius, the statesman and the poet are all out of harmony with their surroundings, yet the term insanity can hardly be taken to describe their mental life. Moreover the criminal, the pessimist, nay, even the ambitious man, may each be out of harmony with his environment but yet not insane. Of all the symptoms of insanity, possibly the presence of illusions and hallucinations, which delusions corroborate, are the chief indications, because these form the basis of acts and it is *conduct* in the last resort which is the keystone upon which a judgment rests as to what constitutes sanity or insanity. It may be pointed out, however, that there are probably many hundreds of men and women who suffer from no legal disability or social ban because of the presence of illusions, hallucinations, or delusions. They fulfil all their obligations to themselves and to society and their idiosyncracies are tolerated. When, however, abnormal conduct passes a limit fixed for that particular class of society, considerations of expediency decide that the person should be segregated; he is then certified and henceforth becomes an official lunatic and his insanity a recognized aberration. I venture to think that many of these cases in their early stages are functional. It is well known to those with large experience of mental diseases that all the symptoms of insanity may be present in disordered conditions of health, and cases are received into asylums which are not true organic insanity but the delirium of febrile diseases, where illusions, hallucinations and delusions were temporary and due only to disordered nutrition. I have seen cases of scarlet fever, typhoid, and pneumonia in whom the mental symptoms so preponderated that the patients were certified and admitted into an asylum as alleged lunatics in whom the illusions, hallucinations, or delusions were only the temporary delirium or febrile states resulting from disordered nutrition. Furthermore, in regard to the question of insanity the symptoms may be repressed at the instance of the individual patient, who is able to inhibit the undue prominence of delusions or of any one striking content of consciousness, which again indicates that there is an absence of structural or organic lesions. It will be seen that we not only deal with legal insanity—which is a formal and artificial aspect—but that the term insanity is to

us more comprehensive and is taken to include all mental conditions which are opposed to sanity. What has the pathologist to say to us about insanity? If we except definite lesions accompanying parietic and other forms of dementia, certain neuronie and other changes in acute delirium, and the deficiency of brain development in idiocy and imbecility, there is no pathology of insanity. There are innumerable mental states for which there are no definitely discovered or ascertained physical conditions, and there are many mental abnormalities in which both microscopical examination and the comparison of appearances observed after death with the symptoms recorded during life, fail to discover any morbid states in the brain underlying the mental derangement. In many cases of insanity the most delicate electrical apparatus, the test tube, the ophthalmoscope, the sphygmometer, and the microscope in the hands of able, earnest, and competent observers and investigators have all failed to recognize any disease in the physical substratum of mind, and observers have been content, in the absence of definite lesions, to describe mental abnormalities as "disease manifestations"—but not disease, *i. e.*, the mental states or conditions are functional and not due to structural or organic changes. It is open to objection that the absence of observable lesions is not definitive, that failure to observe them is due to insufficiency of the means of investigation at our command and that the further investigations are directed the fewer become the the number of functional diseases. It is accepted, however, that up to the present many nervous disorders have attributed to them as facts of causation conditions such as are implied in the terms "defective or disordered cerebral innervation," phrases which although somewhat vague may yet probably harmonize with the facts better than any others hitherto advanced. Ferrier, Horsley, Waller, Sherrington, and other great physiological workers have thrown much light upon the energy set free in nervous centers. Horsley has detailed methods of estimating the amount of energy developed in the nervous centers themselves by quantitative measurements of phenomena correlative to nerve energy, and Mosso has endeavored to draw conclusions in regard to nerve energy by measuring the physical effects directly produced by its activity. In spite of these researches, however, we know little more than the rate of transmis-

sion or the rate of progress of nervous energy along a nerve. What the actual energy may be is still vaguely described as "motion liberated by molecular change," *i. e.*, by chemical or electrical changes in the highly specialized nervous structures, a position scarcely advanced beyond the description of Newton, that nervous energy was "a vibratory disturbance of the particles of the nervous system." Possibly all actions of nerve elements in the brain are a chemical change, the molecules breaking up into lower compounds. We know little about nerve force, but we do know, by their sensitive reaction to toxic agents, that the higher nerve structures are exceedingly delicate, that they are readily excited and readily inhibited showing a condition of sensitive equilibrium, which is demonstrated by the disturbances of muscular action so characteristically associated with the mental erethism of acute insanity. Let us briefly consider the physiology of these nerve structures. When that part of the cortex anterior to the fissure of Rolando is electrically stimulated, co-ordinated and not individual muscular contraction results—the contractions being with the object of accomplishing some definite movement. An irritative cortical lesion here will cause clonic convulsions, and if circumscribed then convulsions occur in definite groups of muscles, as is observed in Jacksonian epilepsy. A destructive lesion in the same area of the brain will cause paralysis of the same group of muscles, but the paralysis is of the spastic type, which shows that the contractility of the muscles maintained by the lower motor neurones in the cord is exalted, either by removing the restraining influence of the cortical set, or by irritating the lower through the degeneration of this higher group. With regard to tactile sensation, the researches of Sherrington, Campbell, Bolton, and others show that these afferent sensations arrive in the cortex of the parietal lobe by way of the optic thalamus—which probably modifies impulses from the periphery—and are closely related to the efferent motor discharges. Tactile sensation is the most general and universal source of knowledge of the environment in the vertebrata, and it is this region, possibly the "kinaesthetic area," which is affected in sensori-motor disturbances and gives the individual his personality. As to the neurone, its body not improbably exercises a trophic influence over the neuraxon, which also in turn exercises some temporary influence

upon the cell body, whereas the protoplasmic dendrites by their arborizations with axis cylinder collaterals and by their extensive branchings over minute blood-vessels are both centripetal organs for collecting nervous impulses, and nutritive channels for the supply of food material. We know the effect of most poisons to be upon the nutritive substance of these neurones, and, with the possible exception of the tetanus toxin, not to be upon the nerve fibres or stereoplasm of these cells. We know little of the cortical areas other than those which are sensory and motor or both and which are described as "kinæsthetic," and possibly two-thirds of the human cortex is concerned neither with motion nor sensation, and it is this portion of it which differentiates man from other vertebrates. This remaining portion has been described by Flechsig as the great association area. It is said to be concerned with judgment, comparison, believing, and originating actions, and to be functionally the highest area, involving the most complex intellectual processes. This region, physiologically, is therefore the most highly developed, the least organized, and the most complex of all the cortical areas and in consequence the most likely to be disturbed by adverse stress. In considering functional mental diseases one cannot but be struck with the different reaction to stress of individuals in different families. We know of some families with suicidal impulses, in which mental depression caused the suicide of grandfather, father, and son, each in his turn at corresponding ages. Of all forms of mental affection, that associated with suicide is the most often inherited, and of 1708 males under my care, suicidal tendencies occurred in 27 per cent. In 200 of these latter, a direct history of ancestral insanity was noted in 43 per cent, and a collateral one in 27 per cent. We meet with an epileptic parent with more than one insane child. I have had under my care in an asylum, a father and at different times five of his children and it is quite common to meet with father and son or sons suffering from insanity and frequently in the same asylum. Also, insanity appears to have hereditary equivalents; for epilepsy, hysteria, hypochondriasis, chorea, alcoholism, and crime, may appear interchangeably in the descendants of insane parents. Even genius, which is a departure from the normal type, is not infrequently met with among relations from an insane stock. Not a few among the patients in city asylums,

or among their relatives, are inventors and patentees. In no department of medicine is the question of family inheritance more marked than in the practice of nervous diseases, and it is not ideas or diseases themselves that are transmitted as we see by the interchangeable equivalents already referred to, but a "tendency" or a natural proclivity to nutritional disturbances and manifested mainly at one or other of the important and critical periods of life when a strain or a stress ordinary and habitual to the stable person and easily borne by him, may in those with family history of insanity cause a mental breakdown. Man is an agglomeration of organs, and the healthy life of man is the harmonious co-operation of all these dissected elements, each of which in health contributes to the total well-being, each also being capable of resisting disintegration through adverse circumstances, according to its own special stability. This tendency is familiar in the practice of all hospital physicians who observe the liability to nutritional disturbances in other organs, such as the liver or kidney, or in groups of organs such as these with cardiovascular affections, and also by the appearance of malignant disease passed on, so to speak, from parent to offspring.

Now mental reaction greatly depends upon the character of the afferent stimuli brought to the cortex from the various sense organs, and it is interesting to note that the sense of smell (the least informing to man in regard to the external world) is phylogenetically the oldest, being most highly developed in the lower vertebrata; some fishes, for instance, having as Dr. G. F. Watson has shown, relatively the greatest central representation for it. This sense is therefore the most organized and it is rare for the sense of smell, or even taste, which also gives little knowledge of the external world, to be affected in insanity. The two senses which supply man with means of communication by speech, writing, and reading are sight and hearing; together they are pre-eminently intellectual, they are exact and analytic and are on a higher plane in man than are any of his other senses, but they are the most frequent to be disturbed in cases of highly evolved insanity. Touch, the most general of the senses is less intellectual than either sight or hearing, but is the one most commonly disturbed in that "lower level" form of insanity associated with hysteria, and to which we shall again refer. As to the senses, illu-

sions form a common psychic phenomenon in insanity and it is doubtful—unless they are unilateral—if mental illusions are ever peripheral. Both illusions and hallucinations may be physiological, that is, they may be temporary in their duration or they may come and go. We meet with cases of insanity in whom these perversions are not constant; there are periods during which those who suffer from them are suddenly quite free and remain so for indefinite intervals, a condition which suggests that the fundamental process is nutritional and functional; possibly the fine dendritic processes of the neurones are temporarily disturbed, as they are known to be in cases of injury, when mental unsoundness is characterized by loss of memory of the accident, but which ends in complete recovery. It is a short step from illusions and hallucinations to delusions, which are ideas conceived upon false sensory impressions or perceptions. We are familiar with deceptive impressions produced by diplopia, scotomata, photopsia, disease of the peripheral nerves, and enotic sounds of various character, all of which may be due to nutritional disturbances and none of which can be considered to be insanity. Delusive ideas, like hysteria with contractures, may in time be accompanied by organic changes, but in their early stages they are more often functional, for other associations may grow and eject them. It is the consequence of delusions rather than their cause which makes them pathological and it is their projection outwards which eventually causes them to be regarded as insane delusions. So long as we are dealing with the external world, our facts of causation are simple and apparent, but when we pass to ideas—questions relating to “self”—we are face to face with “consciousness” and we are unable to analyze either the consciousness of others or what have been described as our own “unconscious physiological processes” conditions often referred to in hysteria. We can only state that the cause thereof appears to be psychical phenomena. We do not know even what the various elements of mind may be, but we can relate the different ways in which consciousness may refer to an object, viz., as being pleased with it, desiring it, and remembering it. We do know, however, that the various elements implied in cognition and feeling, when displayed in correct association and under proper control do give us healthy mental reaction; when these are impaired or their combination

is affected, then the prominence given to any one factor possibly implicates all the others, and illusions, hallucinations, or delusions result. The delusions met with in insanity—whether functional or organic—are as various as the manifestations of human thought and we can only say in regard to them that some stimulus probably excites a group of cortical neurones, and a kind of "intercellular tetanus" gives rise to a play of ideas, which, when the excitations are transferred to motor fibers, are associated with action. In health the steady current of nerve force flows evenly from center to center and there is equilibrium between the various groups of cortical neurones, the stream of nerve force also flows down the pyramidal tracts and controls the spinal centers, keeping the muscles in a state of healthy tone. All the neurones are probably in a high state of chemical tension and any nutritional disturbance means explosion followed by exhaustion, a condition which we possibly find in all functional diseases.

What is the characteristic feature of functional diseases and what are the forms of mental abnormalities which come under this description? Speaking generally, we are correct in stating that functional diseases are characterized by their lesser duration, their slight and transitory character and their recovery, and this is the standpoint from which we urge the consideration of the subject under discussion.

It is not improbable that hysteria is at the root of most of the mental conditions in women that came under the observation of the asylum physician. It is as definitely related to mania in women as hypochondriasis is to melancholia in men, and both are conditions pre-eminently functional in their pathology. Hysteria may be looked upon as a temporary sensori-motor disturbance with a psychosis, and the sensory disturbances of hysteria indicate that there is a participation of centers lower than those connected with mental symptoms. Hysteria is a "lower level" form of insanity, which to some extent is under the control of the higher centers; whereas insanity is an affection of the highest levels and therefore a disturbance of the highest intellectual processes themselves. In hysteria the tendency was for action to follow upon afferent or sensory impressions, whereas in case of insanity, action followed delusions. Sensory disturbances effected results in hysteria similar to "fixed ideas" in variety and as in

hysteria one cause or a summation of causes may bring on various effects, so in insanity one overwhelming psychosis or a series of small worries and anxieties may cause the mental symptoms.

The greater number of women admitted into asylums during the adolescent period of life suffer from insanity of a transitory type as is evidenced by the fact that of the women admitted under the age of 25 years into the London asylums during 1903, 53 per cent were discharged recovered, whereas the recovery rate based upon all ages was only 34 per cent. This type of insanity is often dependent upon anomalies of health, such as anæmia, amenorrhœa, simple exhaustion, the strain of modern life, and disturbances of the emotions, and it passes off with improvement in the general health, and nearly 50 per cent of all the women who were discharged recovered left the asylums of London under six months residence. There is no definite hysterical psychosis, although most of these cases are exceedingly unstable and sudden in their mental reactions, which is shown by their capriciousness, irritability, and sentimentality; being at one moment joyous, at another sad and tearful, but without obvious reasons for the change. In the intervals between hysterical attacks they are bright, intelligent, and cheerful. These cases are always exceedingly responsive to suggestion, and the various forms of paralysis they suffer from are either assumed by suggestibility, or they recover by suggesting or diversion, the moral treatment frequently referred to as asylum treatment and implying a change of function. There is often a loss of memory which renders hysterical patients self-contradictory, but the amnesia is not limited to ideas, there is amnesia of the "kinæsthetic" elements as well. There is no recollection of the movements of a limb, showing that the sense of muscular impressions—probably registered in the Rolandic area—is functionally in abeyance, the various movements with their images fail to be preserved and reproduced owing to the functional disturbances giving rise to a condition called "kinæsthetic anæsthesia." Amnesia in these cases may be so marked that all past events in their life may be completely deleted, their memory only returning with or after another paroxysm. Such cases are rare, but a classical description is given of sudden transformations by Dr. Albert Wilson in his record of a case of "double consciousness" or dual per-

sonality. These occurrences quite justify the definition of hysteria as a "disintegration" of the personality. The weakening of will power is a distinct feature in these cases, many women being quite unable to carry on their ordinary avocations and having no power even to answer questions. The prominence of the sensori-motor disturbances gives rise to vociferous singing, laughing, and dancing, or the patients in their excitement break windows, tear clothing, shout, scream, and behave extravagantly, which indeed most frequently results in their being brought under treatment. These seizures, followed by lethargy together with the mental state have caused such cases to be mistaken for epilepsy, and I have received cases in which the seizures and symptoms were described as due to this cause, but which were really cases of hysteria. I have also received cases in which these statements were made in the medical certificate, but the fact of coming under treatment and being brought to the asylums has acted as a shock of surprise and no further demonstration of excitement have taken place. The suddenness of these states and their variability harmonize with the suggestion that these are nutritional disorders and not organic lesions. Of all the physical symptoms of hysteria, anæsthesia or disturbances of sensation are the most constant, and cases are familiar to most hospital physicians of patients who were completely helpless upon admission, yet who could move their legs in bed or push their feet against an object but could not stand or walk, yet with the stimulus of a strong emotion or a new suggestion they have walked easily, possibly after weeks or months of bedridden helplessness. The anæsthesia in hysterical cases is somewhat pathognomonic. It may be in islets of skin not corresponding to any peripheral nerve distribution or that of blood-vessels, neither does it conform to any spinal distribution and it is not segmental or embryonic in character. It is total and complete, and corresponds with a cortical area having associated or systematized functions. Hysterical patients are not conscious of their loss of sensation, the loss does not come into their personality and there is in consequence a "shrinkage" of consciousness. Such is not the case in the anæsthesia of gross lesions, which further suggests cortical affections. The cortex, moreover, besides sensation, controls the emotions, the heart's action, respiration, speech, and voluntary movement. All these may be, and often are, affected in hysteria.

In the condition described as *astasia* there is no definite paralysis, but the patient is unable to stand, and in *abasia* he falls when attempting to walk, although he can skip over a rope or walk on tip-toe. Moreover, in conditions such as "writer's cramp" and in the various and numerous other occupation neuroses, there is paralysis of different forms, but at the same time there is complete control over the hand, which can accomplish any movement other than that which caused the paralysis. Such clinical facts as these distinguish between disturbances of function and disease of the organ—a theory which is thus capable of explaining the phenomena. The mental symptoms of hysteria are vividly portrayed in mental epidemics, such as are initiated by the so-called "Revivalism," as also in cases of "possession" or "demonomania," cases of witchcraft and "cures" at holy shrines.

Another functional condition which merges into insanity is hypochondriasis. It is as closely related to sensation as hysteria is to the emotions. There is a feeling of profound illness and a tendency to exaggerate and brood over the feelings, which give rise to morbidly conscious states. The whole of the person's attention is concentrated upon his sensations, but there is nothing abnormal to be discovered at the periphery, and the functions complained of appear to be physiologically healthy. If in hysteria there is a cortical absence of certain sensations—which may determine anæsthesia and paralysis, in hypochondriasis there may be cortical hyperæsthesia of sensory areas. Whether these conditions are due to exhaustion, or to some influence which modifies exhaustion, and which brings these sensations into undue prominence is not easy to ascertain. If, however, hypochondriasis be of long duration, the mental state associated with it tends to become fixed, which supports the view that long continued functional disorder tends to become organic, as we see when hysterical contractures are accompanied with sclerosis of the corresponding pyramidal tract. It has been experimentally proved that peripheral electrical stimulation continued for long periods may give rise to structural changes in the brain. There are many borderland cases whose depression may be diverted by functional treatment; cases which a change of occupation relieves and which thus recover.

A condition often met with in highly wrought, able, and over-

worked men and women and now described by the term neurasthenia is somewhat allied to hysteria. There is hyper-sensitiveness in both, but there are no sensory disturbances in neurasthenia, no motor paralysis, no fits and no contractures, although neurasthenia may occur in hysterical subjects. There is simply fatigue and increased excitability with muscular weakness, and it is a symptom-complex rather than an entity. There is the same difficulty in fixing the attention and the same deficiencies of memory as in hysteria. The condition is probably the result of long continued mal-nutrition and ill-health, and is favored by civilization and city life, by heredity and by various excesses. Of the exciting causes, possibly, influenza, is as potent a factor as any, especially when acting upon an already exhausted constitution. I have seen many such cases outside the asylum, not seldom among the "prize winners" in life; and although nature is generally uniform in her lesions, this functional state being of long duration is known to end in confirmed organic brain changes and chronic insanity, demonstrating its analogy to the contractures accompanied by organic lesions in cases of protracted functional hysteria. A state of mind bordering upon insanity is that of mental depression without delusions, the condition described as "*folie raisonnée délire*." There is no other functional disturbance and the sufferer is for a varying period in this state of unrest when suddenly equilibrium is established and the phase passes off.

Another functional condition which is responsible for at least 8 per cent of all cases of certified insanity is epilepsy. The abnormal mental states associated with epilepsy are unlike ordinary insanity for those who suffer from it are more altruistic and they are less under the sway of delusions, but suffer more frequently from sensory disturbances. The mental states of epilepsy seem to be halfway between these of hysteria and true insanity, the sensori-motor disturbances are present and so also are those of consciousness, which latter during the fit is completely in abeyance, yet it must be owned that there are no definite lesions in cases of idiopathic epilepsy. Of all mental states in relation to the fit that of post-epileptic automatism is the most inexplicable. After an epileptic fit a person will occasionally lose all memory of past ideas, he will wander about, take a new name, forget wife, family,

and domestic attachments, assume a fresh occupation and oblivious of the past start upon a new life and remain in this fresh environment for an indefinite period, or until another fit brings back his recollection and he returns home after a complete functional "topsy-turveydom." Some such occurrences in less striking forms are frequent, and are closely related to hysteria, but as they suddenly change, they remain unexplained by any organic or structural theory. I have recently had under my care three men certified as insane after a "fit" of some kind which completely erased from their memory events in their previous life and leaving them with a new personality.

In ordinary daily life we often find after fatigue that there is considerable difficulty in fixing the attention, we have a weakened grasp of our subject and cannot recollect a lost word—there is difficulty in expressing our ideas in words. Long after we need it, the missing word appears—possibly in association with some remote expression, and we are unable to explain the phenomenon except upon the theory of disordered neuron function. It has been pointed out by Gowers that the most common effects of over-use of the brain are sensory, and evidenced by some disturbances in the feelings which, as he states, are appalling in their variety and degree. This view, in my opinion, coincides with the evolution of insane ideas which are based upon sensory anomalies; but what it is that causes these functional disturbances is not so clear. Hodge describes a swelling but not a destruction of the cellular protoplasm in conditions of fatigue. Possibly some products of nervous overaction fail to be eliminated, and either poison the store material of the nerve cell or interfere with some obscure electrical or radio-active action at the synapses. As Gowers further states, we cannot estimate the cumulative effect to which a minute original variation in the nutritive material of a nerve cell may give rise, but we have experience, and are aware, that function can alter structure. In regard to some of the allied neuroses, cases of "convulsive tic" seem to me closely related to cases of delusional insanity and impulsive obsessions, those of neuralgia and megrim, of tetany and cramp also closely resemble in their suddenness and intensity those of various forms of epilepsy. I have seen tetany associated with mental depression, following exhaustive diarrhoea, and both have cleared

up with improvement in the general health. These neuroses with chorea, and para-myo-clonus multiplex seem to me to be heirlooms of psychopathic and neuropathic families, and so far as it is at present known are without definite structural pathology. I have at present under my care a case of para-myo-clonus with mental symptoms, who is one of three members of the same family similarly affected. The mental state of patients suffering from what is styled "dementia precox," in my opinion seems to be closely allied to functional states, some of which appear to be physiological. The mental pre-occupation of ordinary normal health for instance bears much resemblance to the abstraction of these demented youths, and it may not be unreasonable to look upon the later as functional states, for a few of these persons recover quickly, the symptoms are of short duration and vary from slight moody self-absorption to complete lethargy and stupor. Moreover, the mental symptoms probably occupy the same nervous regions, they are provoked by the same causes and are executed by the same mechanism, whether the condition be functional or organic. It is unlikely, however, that long continued stupor can exist without organic change in the pyramidal cells of the cortical area, as functional activity stimulates nutrition and is beneficial; whereas, its suspended activity means a decreased blood supply and therefore a slower removal of used-up products and less nutritive plasma.

The normal physiological condition of pregnancy is another process with mental symptoms. It is a function which involves the reproductive organs and affects the whole organism. The function of reproduction covers most of the elementary excitations of which man is capable, and is one of the most imperative and fundamental of the activities in nature. It is accepted that gestation is attended with a great deal of nervous disturbance in all women, the intimate sympathetic connection of the mammæ with the gravid uterus giving rise, even in normal persons, to various forms of neuralgia, headaches, dizziness, and insomnia, which may be so extreme that irritability, fractiousness and despondency of a serious character ensue, yet these conditions completely pass off in the majority of cases when the fulfilment of this process is complete.

I purposely avoid any reference to the many toxic insanities,

although the confusional delirium and the acute hallucinatory states accompanying alcoholic intoxication, pernicious anæmia, puerperal toxæmia, cocaine, morphine, pellagra, and other poisons closely simulate those of febrile diseases and coma. Possibly that condition described as dipsomania, the longing or craving for stimulant is a functional state. It is like other similar states without any organic pathology and like them also one that occurs in persons with a tainted family history—psychopathic or neuro-pathic.

I do not think I need go further than to draw two conclusions from the imperfect consideration of this long list of functional mental and nervous diseases. Firstly, the necessity for maintaining a sound heredity. Secondly, to urge that all cases presenting mental symptoms should be brought under treatment as soon as possible, for minute variations in the nutritive plasma may effect serious results upon and cause distressing disturbance in the essential element of nervous tissue, as functional mental diseases of long standing in an organ such as the brain—which is the slowest to reach maturity—may cause organic and incurable insanity.

COMPARATIVE MEASUREMENTS OF THE HARD PALATE IN NORMAL AND FEEBLE-MINDED INDIVIDUALS. A PRELIMINARY REPORT.

BY WALTER CHANNING, M. D., AND CLARK WISSLER, PH. D.

The writers have taken up the question of the variability of the contour of the hard palate or what is popularly known as the roof of the mouth, because the assumption has been made that certain types of deformity are the correlates of feeble-mindedness. This assumption is so generally current that it is made a principle of diagnosis; and if it is valid, the form and size of the bones of the palate must be regarded as an important morphological determination. The ideal way of approaching the problem would be through the comparative measurements of the skulls of feeble-minded and normal individuals; but material of this kind is not available. Thus it becomes necessary to make observations upon the palates of living subjects. To this end Dr. Channing spent several years collecting casts of the hard palate. We shall not discuss here the advantages and disadvantages of this method, except to state that practical diagnosis is made upon the living and concerns itself with the same external aspect of the palate tissue as is revealed in the casts. The technique of the casting process has been developed in dentistry.

We present at this time a brief preliminary report upon the measurements of casts obtained from public school children and adults, selected at random, and from inmates of schools for the feeble-minded. The relative number of available casts is as follows:

	Male.	Female.	Total.
Normal	314	300	614
Abnormal	558	452	1010
Totals	872	752	1624

The measurements to be reported upon at this time are:

A. The minimum distance between the first molars, measured horizontally from the bases of the molars.

B. The maximum height of the palate, measured from the approximate plane of the gum line.

C. The distance from the line connecting the two first molars to the alveolar point.

D. The distance between the canines, measured horizontally from their bases.

Other measurements were made, but a discussion of them is not necessary for the present purpose. The determination as to what measurements were significant was made the preliminary problem of the research. With this point in view about 150 casts of normal adult males were measured in a great many ways and the results treated by the method of correlation until the most definitive measurements were discovered. From the standpoint of the ultimate problem—the variations in the form of the hard palate as correlated with mental abnormalities—it was desirable to discover the definitive measurements least affected by growth and accidental variation. The net result of this preliminary study, the details of which will be given at another time, was that the four measurements enumerated above best fulfilled the requirements.

The measurements were made with a machine constructed in such a way as to measure accurately in three planes from any given point. The cast to be measured was placed upon the table of the machine and supported by a ball of modeling clay, which permitted the adjustment of the plane of the palate to the horizontal plane of the machine; the indicators were then adjusted to the points to be measured and the readings recorded. Repeated measurements of the same casts made it evident that accuracy for distances less than one millimeter was not practicable, and in consequence the recording was always to the nearest millimeter.

In such a procedure the errors of measurement include those of reading and adjustment. It is necessary to know not only that all these measurements are considered accurate, but also the approximation of this accuracy. To this end the measurements from a series of 105 casts of normal adult males were repeated as nearly as possible under the same conditions. The values for the two measurements were:

$$\begin{array}{rcc} & \text{Av.} & \sigma \\ A_1 & = 35.07 \text{ mm.} \pm 3.32 \text{ mm.} \\ A_2 & = 35.27 \text{ mm.} \pm 3.19 \text{ mm.} \end{array}$$

But in the nature of the case errors in measurement should not affect the average so long as they are accidental, because there should be as many negative deviations as positive, and if the conditions are constant the value of the standard deviation, or σ , should be approximately the same for each trial. Yet while the average is little affected by accidental errors, it is otherwise with the true value of σ , the standard deviation. Such errors always increase its magnitude because the possible limits of the variabilities in the series are extended by an amount equal to the error in measurement. When the differences between the two measurements of the different casts are tabulated, it appears that a little more than fifty per cent of the differences are zero and that the positive and negative differences are so distributed as to make the average — 0.26 mm. with a standard deviation, or σ , of ± 0.96 . From this it appears that the most probable difference between the measurements of any given cast is less than one millimeter and an inspection of the series shows ninety per cent of these differences to be within the range of one millimeter. This is quite satisfactory as to accuracy, for no measurement can be more refined than the unit employed. The significance of the above is that in 90 cases out of 100 the error is less than one millimeter.

The general tables give the number of cases (n), the average measurement, and the standard deviation (σ) for each age until maturity.

In the first place it seems reasonable to assume that the values for the children of different ages will give a curve of growth. A hasty glance at the numerical averages in the table gives the impression of little or no growth from six years to the age of maturity. But while the amount of annual increment for this period of life is small and of little significance, certain interesting differences appear when the averages for the respective ages are plotted. The width of the palates of normal children as measured at the first molars shows a general tendency to increase for the successive ages from six to fourteen years, the curves for males and females having the same general direction. For males the maximum difference in average width occurs between the sixth and eleventh year—a difference of 1.69 mm. The probability of this difference is expressed by $1.69 \pm .72$, or about 0.965. Yet this is the extreme difference for the successive ages from six

to fourteen years, and some reduction must be made for accidental variation in the series measured. Moreover, the general trend of the curve indicates that the increment of growth for the whole seven years is not more than one millimeter. The average for the total of normal male children ($n = 192$) is 32.92 ± 2.28 mm. This average of approximately 33 mm. does not vary more than one millimeter from the value of any one year throughout the period. Unfortunately the series of normal palate measurements is not complete and it is necessary to compare this value directly with the average for normal adult males: $n = 126$. $A = 34.75 \pm 3.35$. The difference between these averages is 1.83 mm. At this point the importance of a precise method for estimating the magnitude of the allowance for accidental differences between the averages is apparent. This may be done by statistical methods, of which the following is a mere categorical statement.

The accidental range of averages can be estimated from the value of A and σ . A is the approximate average of the type, an unknown value, or the true average. If the first group of measurements gives an average of A_1 , another group of measurements upon individuals of the same type, will give a value A_2 , etc. These values for A will cluster around the true average, or type, in a symmetrical manner. The probable error (ϵ) of any average (A) is expressed by $\epsilon = \frac{\sigma}{\sqrt{n}}$. Now the width of the palate for normal male children is 32.92 ± 2.28 mm. Then for A_1

$$\epsilon = \pm \frac{2.28}{\sqrt{192}} = \pm 0.16.$$

$$\therefore A_1 \pm \epsilon = 32.92 \pm 0.16.$$

The extent or range of a series is found to be about 4.5 times the value of σ ; for convenience we will take it at 5 times. Applying this to the above, we find the entire probable range of A to be ± 0.80 , or a total of 1.60; however, 68% of the values for A should range within 0.16 (ϵ) above and 0.16 below the true average, a total range of 0.32 mm. Now for adult normal males the values are:

$$A_2 \pm \epsilon_2 = 34.75 \pm 0.30.$$

$$\text{The extreme range} = \pm 1.50.$$

Hence, we should expect the averages for other similar groups of the same number of normal males to fall between 33.25 mm. and 36.25 mm. So much must be allowed for accidental differences.

Obviously, so long as A_1 and A_2 do not differ from each other more than their combined accidental ranges of error, they belong to the same type. If they do belong to the same type they should not differ more than their combined error. The combined error of A_1 and $A_2 = \pm \sqrt{(\epsilon_1)^2 + (\epsilon_2)^2} = \pm \sqrt{(0.16)^2 + (0.30)^2} = \pm 0.33$. $(A_1 - A_2) = 1.83$, which is a little more than five times the extreme range ($0.33 \times 5 = 1.65$). Hence, the difference is of such a magnitude that A_1 and A_2 may or may not belong to the same type, the chances favoring the latter possibility. Yet the difference for the averages in width for the ages from eleven to thirteen years falls within the limits of accidental error. Consequently, for male children over eleven years of age and adult males no certain difference in width at the first molar appears, and normal female children give the same result. Thus the absolute amount of growth in this dimension is negligible after the twelfth year.

In the series for abnormal individuals all ages from six to maturity are represented, but the result is the same as for normal children.

The width at the canines shows a more decisive increase among normal children until the eleventh or twelfth year, while the averages for adults show a decrease in the width. The averages for abnormal individuals show a general tendency to fall with increasing age. From the group averages in Table II and III it is apparent that this peculiarity is common to all classes. The difference is doubtless due to the development of the canine teeth. The permanent canines, as shown by the material, begin to show themselves in the tenth year and have appeared in most children by the thirteenth year. This corresponds to the period of maximum width at the canines as found in the measurements. We have, then, a small difference due to the growth of the teeth from which we may infer that there is no growth of the maxillary processes in front of the seat of the canine teeth after six years of age. The averages show that the measurements for the age of

six, seven, and eight are about on the same level as those over twenty-one, which is consistent with the above.

The averages for the length of the palate follow the same general direction as the above, but with greater variation. Those for normal children reach their maxima about the ninth year, and an examination of the casts shows that this is the average age for the eruption of the upper median incisors; consequently their growth would affect the measurements in a similar manner, causing an abrupt apparent increase in the length, followed by a subsequent gradual decrease. Also, the slight increase in the molar width may tend to shorten the length as measured.

This brings us to the height of the palate. With normal children there is no certain increase with age, but the averages for normal adults show a decided growth. Also the averages for the abnormal show a general tendency to increase between the age of twelve and twenty. The corresponding ages for the girls are slightly less, ranging from eleven to seventeen, which is consistent with the general growth differences between the sexes. From all this it appears certain that some increase in the height of the palate takes place during the period of puberty. The difference between heights for normal male children and adults is expressed by 3.86 ± 4.27 mm.—a positive difference.

Incidentally, the differences between girls and boys have been noted, but we may add that the averages for normal children follow the same directions of change with such small degrees of difference that it would be possible to treat them as one series. However, it is apparent that, even with such minute differences as do exist, the boys tend toward higher averages. Both with the abnormal and the normal, with children and with adults, the male palate is slightly larger than that of the female, there being no other apparent characteristic difference. During the growing periods there are suggestions of differences in relative maturity, but these are so uncertain that nothing can be concluded and, in any event, they are probably parallel to the general differences in the rates of growth for the sexes.

As to the absolute size of the palate of the normal and the feeble-minded the tables should give positive information. Since the plotting of the curves for the averages of the normal and abnormal children shows them to have the same general direc-

tions, throughout, we may disregard age and treat the children as a group in opposition to corresponding groups of adults. The averages for children between the ages of six and fourteen and for adults are given in the general tables from which the following table of differences can be calculated:

	Ages.	Male Difference.	Female Difference.
<i>A</i> {	6-13	+ 0.94	- 0.56
	21 +	- 0.98	- 0.72
<i>D</i> {	6-13	- 0.04	- 0.30
	21 +	- 0.63	- 0.47
<i>C</i> {	6-13	+ 0.68	- 0.11
	21 +	+ 1.13	- 0.32
<i>B</i> {	6-13	+ 1.25	+ 0.65
	21 +	+ 0.09	.....

With reference to *A*, *C*, *D*, the differences between the normal and the abnormal are seen to range from zero to one millimeter. The differences for the females are in the negative direction, while those for the males are both positive and negative. For both sexes the differences are the least for *D*, the certainty of which for males is:

Normal and abnormal children..... 0.04 ± 0.31

Normal and abnormal adults..... 0.63 ± 0.31

From these figures it is seen that the probability of finding a difference greater than one millimeter is exceedingly small. Consequently we must conclude that there is no significant difference between normal and abnormal individuals as respects the average width of the palate at the canines. For the measurement *A* the differences for males are:

Normal and abnormal children..... 0.94 ± 0.28

Normal and abnormal adults..... 0.98 ± 0.43

The probability that these differences will ever reach a magnitude of $1\frac{1}{2}$ millimeters or more is very small. For the females the probability is still less. Here again, while there is not such a certain correspondence between the averages as in the case of the width at the canine, it is extremely probable that the normal and

the abnormal palates do not differ in width at the molars by an average amount greater than one millimeter.

For the length of the palate the differences for males are:

Normal and abnormal children.....	0.68 ± 0.31
Normal and abnormal adults.....	1.13 ± 0.46

Here we see that the difference for children is as insignificant as in the case of the width at the canines, and that the larger differences for adults are compensated for by the greater variability of the abnormal males, both cases falling entirely within the limits of the probable variation of the averages. We may summarize them by the statement that the observed differences between the average measurements of the breadths and lengths of the palates of normal individuals as compared with those in abnormal individuals represent the accidental deviations of the averages from the type. In other words there is no certain difference.

The height of the palate increases, apparently, between the ages of fourteen and twenty-one. Thus the measurements of children and adults represent two levels easily compared. For males we have:

Normal and abnormal children.....	1.25 ± 0.21
Normal and abnormal adults.....	0.09 ± 0.33

While we find no real difference for adult males, that for children has the characteristics of a real difference. The female children show no such difference, for while the average height for the abnormal is absolutely greater than for the normal, the difference is within the range of accidental deviation from the type. However, as the difference vanishes at maturity, it seems safe to assume that it is a phenomenon of time variation in growth.

So far we have considered differences in average measurements, ignoring probable differences in the variability of individuals. It is obvious that while the averages for the respective groups of palate casts may approximate one type, they may vary more in one direction than in another or in both. For example, in the width of the palate at the canines we may find more lower and higher values for the abnormal series than for the normal, or a yet greater range of value so balanced as not to change the average. The standard deviation, σ , is the approximate measure of

such differences. A summary of the values of σ for the age groups gives the following:

STANDARD DEVIATIONS.

	6-14				14-20				21 +			
	N.		Ab.		N.		Ab.		N.		Ab.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
A	2.28-2.35		3.01-2.63		....		3.55-3.19		3.35-3.36		3.61-3.08	
B	1.75-1.96		2.28-2.05		....		2.76-2.51		2.31- ..		2.63-2.66	
D	2.31-2.22		3.01-2.36		....		2.89-2.52		2.24-1.65		2.61-2.89	
C	3.05-2.34		3.09-2.65		....		2.83-2.68		2.39-2.55		4.27-3.05	

Thus for the abnormal or feeble-minded, we find a general tendency toward increased variability with age. While males and females show the same general tendencies, variability is usually greater with the former. As regards normal and abnormal individuals the variability of the latter is uniformly greater than that of the former. Thus we have a constant difference between the sexes on the one hand and between the normal and the feeble-minded on the other. Nevertheless, these differences are relatively small. For illustration, the difference between the values of σ for normal and abnormal male children in case of the canine width is ± 0.70 ; which means that the probable difference between the two extreme cases for the respective series is about 3.5 millimeters.

We may summarize this paper with the statement that the absolute size of the palate as measured by the three specified dimensions seems to be the same for feeble-minded as for normal individuals: that there is a relatively small difference in the variability of these dimensions, feeble-minded showing greater variations; that the width of the palate from the first permanent molar forward remains approximately unchanged from the ninth or tenth year of life; and that it is probable that there is no appreciable growth after the sixth year.

TABLE I.—ABNORMAL INDIVIDUALS.

Age	WIDTH OF PALATE AT 1ST MOLAR.						HEIGHT OF PALATE.					
	Male.			Female.			Male.			Female.		
	n	Av.	σ	n	Av.	σ	n	Av.	σ	n	Av.	σ
6	2	.....	.....	4	.....	.....	2	.....	.....	6	.....	.....
7	5	.....	.....	4	.....	.....	5	.....	.....	4	.....	.....
8	17	33.94	2.43	14	30.42	3.10	17	12.61	2.16	13	13.23	2.61
9	16	34.68	2.01	11	32.36	2.65	16	12.19	2.34	11	13.00	1.12
10	31	33.77	2.86	14	32.85	2.35	32	14.43	1.93	14	12.00	1.96
11	40	34.00	3.43	20	32.15	2.77	39	13.69	2.01	18	12.50	1.66
12	44	33.66	3.71	24	32-54	3.32	42	13.90	2.31	25	12.85	2.41
13	20	33.06	3.72	32	32.81	2.16	21	13.00	2.37	32	13.53	2.26
6-13	175	33.86	3.01	123	32.25	2.63	174	13.39	2.28	123	12.96	2.05
14	53	33.28	3.56	38	33.71	3.32	51	13.13	2.68	38	13.58	2.30
15	37	34.29	3.48	33	32.78	4.20	37	14.24	2.97	33	14.78	2.36
16	43	34.65	2.41	37	32.59	3.07	42	13.92	2.67	37	14.13	2.40
17	37	33.25	3.31	25	32.80	3.05	36	14.55	2.60	25	15.64	1.92
18	34	34.76	3.31	28	32.18	3.28	34	15.55	2.90	28	15.47	2.71
19	17	35.64	2.86	27	32.11	3.00	17	15.41	2.50	27	15.59	2.65
20	37	35.75	3.92	23	32.86	3.46	36	16.00	2.08	20	14.95	2.56
14-20	258	34.29	3.55	211	32.77	3.19	253	14.35	2.76	208	14.76	2.51
21+	125	33.77	3.61	115	33.28	3.08	112	16.09	2.63	115	14.87	2.66
Total	558	34.04		449	32.80							

TABLE II.—ABNORMAL INDIVIDUALS.

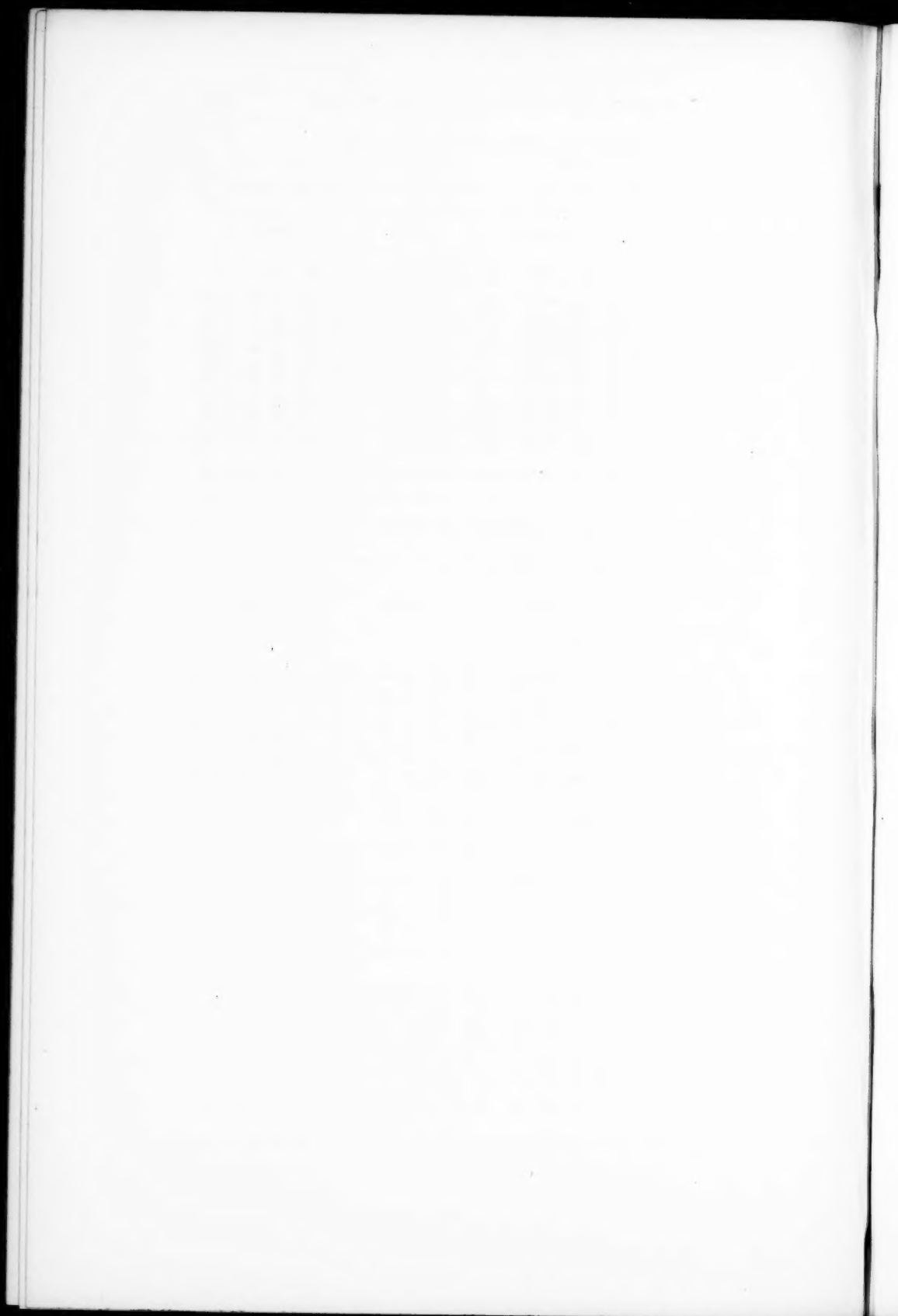
Age	LENGTH OF PALATE.						WIDTH OF PALATE AT CANINES.					
	Males.			Females.			Males.			Females.		
	n	Av.	σ	n	Av.	σ	n	Av.	σ	n	Av.	σ
6	1	.....	.....	4	.....	.....	2	.....	.....	6	.....	.....
7	3	.....	.....	4	.....	.....	5	.....	.....	4	.....	.....
8	14	31.15	2.01	14	29.78	.....	17	22.17	2.31	14	22.64	2.45
9	16	31.00	2.81	11	32.30	.....	16	24.93	3.48	11	23.27	1.90
10	32	31.59	2.61	14	30.00	.....	32	24.84	3.66	14	22.50	2.13
11	39	31.46	3.21	20	30.45	2.23	40	23.32	1.87	20	21.75	2.33
12	43	32.11	3.18	23	30.82	3.30	44	23.25	2.77	25	22.96	2.35
13	21	31.33	3.25	32	30.53	2.87	21	23.66	3.48	33	23.03	2.46
6-13	169	31.36	3.09	122	30.59	2.65	177	23.53	3.01	127	22.68	2.36
14	54	31.27	2.91	38	28.63	2.85	53	23.66	2.65	38	23.10	1.97
15	35	30.00	2.07	32	29.03	2.22	37	23.89	2.15	33	21.60	3.43
16	42	29.47	3.35	36	29.63	2.32	42	23.83	2.28	37	22.00	3.10
17	37	30.16	2.66	24	29.04	2.33	36	22.44	2.53	24	21.75	2.28
18	34	29.44	2.38	28	29.89	2.70	34	22.94	2.68	28	21.57	2.63
19	16	28.81	2.32	27	28.22	3.01	16	23.50	2.50	27	20.88	2.72
20	36	30.83	2.80	21	30.53	3.42	35	23.51	3.20	23	21.95	2.33
14-20	254	30.32	2.83	206	29.01	2.68	253	23.34	2.89	210	21.77	2.52
21+	112	29.50	4.27	102	28.67	3.05	124	22.36	2.61	115	21.67	2.89

TABLE III.—NORMAL INDIVIDUALS.

Age	LENGTH OF PALATE.						WIDTH OF PALATE AT CANINES.					
	Male.			Female.			Male.			Female.		
	n	Av.	σ	n	Av.	σ	n	Av.	σ	n	Av.	σ
6	15	29.73	2.71	38	29.08	1.65	16	23.00	1.87	46	21.30	1.96
7	25	30.86	3.07	36	29.91	1.72	27	22.37	1.86	38	22.50	2.32
8	27	31.15	2.86	29	30.93	2.17	26	23.61	2.15	31	23.00	2.25
9	36	31.16	3.27	43	31.65	2.15	35	23.67	1.96	43	23.60	2.02
10	30	31.33	2.91	34	30.85	2.12	30	24.13	2.28	34	23.70	2.17
11	22	30.77	1.65	31	31.54	2.98	21	24.33	2.17	31	23.48	2.07
12	21	23.98	3.21	23	31.13	2.02	21	23.43	2.80	23	24.17	2.41
13	12	30.75	3.43	16	30.87	3.31	11	23.09	1.48	15	23.20	2.26
6-13	188	30.68	3.05	250	30.70	2.34	187	23.57	2.31	261	22.98	2.22
21+	104	28.37	2.39	48	29.09	2.55	112	23.00	2.24	50	22.14	1.65

TABLE IV.—NORMAL INDIVIDUALS.

Age	WIDTH OF PALATE AT 1ST MOLAR.						HEIGHT OF PALATE.					
	Male.			Female.			Male.			Female.		
	n	Av.	σ	n	Av.	σ	n	Av.	σ	n	Av.	σ
6	16	32.00	2.33	39	32.28	2.13	16	12.50	1.32	39	11.33	1.60
7	25	32.84	1.75	36	32.36	2.65	26	12.80	1.61	35	11.88	1.65
8	29	32.88	2.54	31	32.54	2.43	26	11.88	1.51	29	12.41	1.47
9	37	33.03	2.60	43	33.14	2.28	34	12.35	1.96	43	12.97	1.83
10	31	32.80	2.32	33	32.27	2.48	31	11.48	1.66	34	12.02	1.58
11	26	33.69	2.27	31	33.35	2.13	22	12.04	1.76	31	12.51	2.07
12	16	31.87	2.81	23	33.47	2.28	21	12.42	1.93	23	12.39	2.32
13	12	33.33	3.18	16	33.93	1.87	12	11.50	1.82	16	13.12	2.08
6-13	192	32.92	2.28	252	32.81	2.35	188	12.14	1.75	250	12.31	1.96
21+	126	34.75	3.35	49	34.00	3.36	112	16.00	2.31			



Notes and Comment

CENTENARY OF THE EDINBURGH ROYAL ASYLUM, MORNING-SIDE.—We learn from the article on Insanity in the Centenary issue of the *Edinburgh Medical Journal* to which reference is elsewhere made, that the Edinburgh Royal Asylum was opened for patients on June 8, 1809, and in four years, therefore, it will have completed one hundred years of service to humanity and science. It was at this asylum that Skae did his best work, and his pupil Clouston has made the name of the institution famous wherever the English language is read or spoken.

It is to be hoped that the authorities of the asylum, and the lunacy administration of Scotland will make an effort to fittingly mark the rounding out of the first century of the asylum's career in 1909, and that those who have drawn inspiration and help from the work and example of its medical officers will have an opportunity to join in any celebration which may take place.

HONORS TO DR. W. W. IRELAND.—On March 4, 1905, in the library of the Royal College of Physicians of Edinburgh, Dr. W. W. Ireland was presented with an illuminated address and a purse containing a sum of money subscribed by many of his friends in Scotland. Dr. Playfair, the president of the college, was in the chair, and the presentation was made by Dr. T. S. Clouston, of the Royal Edinburgh Asylum.

The address presented to Dr. Ireland reads as follows:

"On the occasion of the fiftieth anniversary of your medical graduation, and in token of our admiration of your half-century of strenuous work, we desire to offer you our hearty congratulations and to ask you to accept the accompanying gift.

"You entered your profession at an epoch when modern medicine was laying its foundations on a scientific basis. Your teachers in the University of Edinburgh were men of the highest gifts, and, catching their spirit, you have yourself worked hard for the advancement of medicine and the abatement of human suffering in many important ways. Severely wounded at the outset of your

career in gallantly doing your duty during the Indian Mutiny, and suffering from the effects of that wound ever since, you have not taken life easily or spared yourself the fatigue of special brain effort. In literature, in science, and in history you have made your mark on your time. You have opened up a new path in biography by your application of medico-psychology and studies in heredity in the elucidation of the lives of men who have made history. Showing how well you hit the mark, one of those studies of an Emperor of Russia was excluded from circulation in that country. These studies were not only scientific, but were also vivid and interesting to all intelligent readers. 'The Blot upon the Brain' and 'Through the Ivory Gate' will, we feel assured, hand down your name to coming generations.

"In that department of medicine which you have made especially your own you have built up a world-wide reputation. The 'Mental Affections of Children' is our standard work on developmental defects of the mind. Combined with your practical work in this department at Larbert, that book makes the profession of medicine and humanity your debtor. Your original papers on mental and nervous disease and on many other departments of Medicine, scattered in many journals, are all of much interest and value. Your numerous translations and abstracts of important papers in foreign journals have been of great use to your readers, and showed that you were willing to undertake even the drudgery of science on their behalf. Many foreign scientific societies have shown their appreciation of your work by conferring on you their honorary membership.

"Your life has been one of steady effort. Your stores of knowledge, through your extensive reading, have always been willingly placed at the disposal of your professional brethren. To few of their profession could they go with such a certainty of help for valuable references.

"Above all those merits, your personal character combining modesty and genial humor, earnestness and truthfulness, have won our respect and affection. We desire most cordially to express to you our wishes for a long and happy life of still further usefulness. We believe that you will always enjoy the happiness of the man who 'keeps himself simple, good, sincere, grave, unaffected, a friend to justice, considerate and strenuous in duty.'"

Dr. Ireland's many friends on this side of the ocean will rejoice in this well-earned recognition of his work, and join in wishing him many more years of activity and usefulness.

RESIGNATION OF DR. EDWARD B. LANE.—After filling with honor and distinction for nearly twenty years the position of Medical Superintendent of the Boston Insane Hospital, and bringing the institution up to a condition which was alike a credit to his administration, and to the city of Boston, Dr. Edward B. Lane has felt it his duty to resign. The *Boston Medical and Surgical Journal* in commenting editorially upon Dr. Lane's resignation, says:

"It is understood that Dr. Lane felt that his resignation was morally forced upon him by the action of the Board of Trustees. Up to the present time it has been the rule at this hospital, as at similar institutions, that the superintendent, who is held responsible for the proper administration of the institution, should select his assistants subject to the approval of the trustees. The trustees of the Boston Insane Hospital have seen fit to change this rule and no longer require the nomination of the superintendent in making such appointments. Acting under this new rule, they made an appointment which did not meet the approval of Dr. Lane.

"It is unnecessary to speculate upon the motives which may have inspired this action. To the members of the medical profession who know Dr. Lane's ability, and the conscientiousness which he has brought to the performance of his duties, the knowledge that his judgment was at variance with that of the trustees is sufficient ground for deciding that the trustees made a mistake. Nor can we help feeling that a matter which is serious enough to demand a resignation was, in Dr. Lane's judgment, one that vitally concerned the proper administration of the institution and the welfare of the unfortunate patients. Under such circumstances Dr. Lane has taken the only step open to him as an honorable member of the profession with a high ideal of his duty to those intrusted to his care. It is deplorable that such a step should become necessary in an institution which has hitherto been so admirably managed and in which the citizens took a just pride."

Those who hope to see psychiatry assume the position among

the other medical sciences in America which it should hold, and psychiatric clinics established here which shall be on a par both in teaching and in clinical and laboratory research with the best of Europe, can but see in such instances as these, which in one form or another are all too common, a most serious bar to the hoped-for progress.

CENTENARY OF THE EDINBURGH MEDICAL JOURNAL.—The *Edinburgh Medical Journal* celebrates its one hundredth anniversary by the issue of a special centenary number for January, 1905. In this, an introductory note gives a brief history of the journal, and following it are summaries on the progress made during the past century in the various branches of medical science, especial prominence being naturally given to important contributions which have appeared in the *Edinburgh Journal*. There are also thirteen half-tones of the first publisher and the former editors of the journal. The number is a very interesting one. The record of the *Edinburgh Medical Journal* is one of which it has every reason to be proud. We extend our congratulations to the editors upon their publication reaching such a ripe old age and upon the special centenary issue, and we hope that the years to come will continue to find the *Edinburgh Journal* in the front ranks of medical journalism.

DEDICATION OF A NEW CHAPEL AT THE JAMES MURRAY ROYAL ASYLUM.—*Excelsior*, the quarterly magazine of the James Murray's Royal Asylum, Perth, Scotland, discards its usual plain brown dress in its October number and appears in gorgeous purple and silver. This gala dress is assumed to celebrate the opening and dedication of the new chapel at the asylum, which, judging from the illustrations and description, must be a great addition to this old and well-known institution. A full account of the proceedings, with the speeches made, is given in the publication. Dr. Urquhart is to be congratulated on having finally achieved what he has so long desired, and from the pleasant things said in the published addresses it is easy to see that the friends and management of the asylum consider the institution fortunate in having Dr. Urquhart at its head.

Abstracts and Extracts

Two Cases of General Paralysis Successfully Treated by Urotropin. By N. F. HARDY. British Medical Journal, January 28, 1905, p. 185.

The author reports two cases of paresis, one having tabetic symptoms, in which a marked improvement followed the use of urotropin. The histories given are extremely brief and are not at all convincing to the skeptically inclined.

W. R. D.

The Dividing Line between the Neuroses and the Psychoses. By RICHARD DEWEY, M. D. Journal of the American Medical Association, Vol. XLIV, p. 277, January 28, 1905.

This is a very suggestive paper and should be read to be appreciated. Objection is made to the use of the word insanity and psychosis is urged as preferable in every way. The suggestion of Dana that the neurasthenias be classed as psycho-neuroses or "phrenasthenia" is fully discussed.

W. R. D.

Dementia Præcox. By F. X. DERCUM. Journal of the American Medical Association, Vol. XLIV, p. 355, February 4, 1905.

In this paper the author briefly reviews the history of the growth and development of a group of cases which are included under the term dementia præcox, and makes the same objections to the name that have been made by so many other writers on the subject. In conclusion the position of dementia paranoides is fully considered and Kraepelin's position on this point is severely criticised. Dr. Dercum believes that no sharp lines of demarcation can be drawn between the various forms of dementia præcox—hebephrenic, katatonic, and dementia paranoides—and that progress will not be served by attempts to do so. He believes the term phantastic paranoia to be preferable to that of dementia paranoides.

W. R. D.

Some Minor or Borderline Psychoses of Alcoholism. By FRANK PARSONS NORBURY. Journal of the American Medical Association, Vol. XLIV, p. 865, March 18, 1905.

The greater part of this article is occupied by the abstracts of the histories of two very interesting cases, with comments. From the author's experience he believes he is justified in saying "that sexual delusions, especially of infidelity, are almost pathognomonic of alcoholic mental perversion." A statement which, but for the qualifying "almost," would find many opponents. The following conclusions are made regarding these mental disorders:

1. They are rare in acute alcoholism, but may appear in adolescents of neurotic type.
2. They are more frequent after adolescence and up to 40 or 45 years of age.
3. They occur both in continuous drinkers and in periodic delinquents.
4. The prognosis is variable, depending on inherited frailties and moral development.
5. Early treatment is advisable as a prevention of major psychoses.
6. Treatment is successful in the majority of cases, providing we have the earnest co-operation of the patients and can have them under our immediate care for a protracted period.
7. Such cases should be distinguished from ordinary chronic alcoholics and should be treated from the standpoint of mental disease. W. R. D.

Ueber Dauerbadeinrichtungen grösseren Stils. Von K. OSSWALD. Psychiatrisch-Neurologische Wochenschrift, Sechster Jahrgang, S. 165-173, August 6-13, 1904.

Among the modern methods of treating the acute and chronic excitable mental cases, besides the bed treatment, the system of prolonged bathing is growing in favor and is found of much value. The combination of both methods, namely, bed and bath treatment, has produced a very marked change in the restless and violent patients of our institution. The prolonged bath, like the bed treatment, need not cause special expense or rearrangement when it is to be given on a small scale. Experience has shown that the prolonged bath may be given in every well-arranged bath room, especially when the latter immediately adjoins the ward. It is necessary that the water supply used for prolonged bathing should be connected with the central heating plant, so that the hot water supply will always be of sufficient quantity both day and night, and the temperature free from variations by reason of water being drawn for other purposes. It is important to test this in each case, especially as to the capacity for supplying warm water during the night, for if difficulties occur in consequence of a lack of hot water, it is not only very annoying, but places the method itself in jeopardy, and can be rectified only at considerable expense. Prolonged baths without arrangements for a sufficient and regular hot water supply are not advised on account of the difficulty of obtaining hot water at all times.

The purpose of this treatment is the quieting of the acute and chronic insane, also those periodically excited. It naturally follows that the bathing plant be placed as near as possible or connected directly with the wards for restless cases where constant attention is required. Accommodations should be made for about 15 per cent of the restless patients. The place in which the prolonged bath is to be established must in general conform with all the requirements necessary in the wards. It should be large and airy, have high ceilings and preferably be of an oblong form in order to make watching easier. It should be well lighted and comfortably heated; thoroughly ventilated without exposing the patients to draughts.

The floors should be waterproof and as warm as possible, so arranged as to drain off the water which collects from the splashing of the patients, and also to make it comfortable for the nurses supervising. The walls should be durable, washable and waterproof as high as one can reach. Indispensable is a water-closet, which is to be located in the room, somewhat shielded. In procuring the bath tubs one must consider three points, the material of which they are made, their shape, and size. Tubs made of copper answer every requirement. The shape of the tub is of special importance for the following reasons: (1) It is necessary for the patients to remain in the bath as long as possible so as to receive the full benefit of it; (2) the bather's position in the tub should be comfortable with muscles relaxed and limbs in an easy attitude capable of being changed according to the patient's will, from recumbent to semi-recumbent or sitting upright; (3) the position, however, should be one of complete repose. Under these conditions only will a prolonged stay in the bath be at all agreeable or beneficial to the patient. In regard to the size of the tub, it should be sufficiently long to enable the patient to lie comfortably at full length and high enough for the water to reach about to the shoulders when in a sitting posture. All of these requirements are met by having a large tub, the head of which is inclined at an angle of about 30 degrees to the horizontal. Tubs of the above shape and size are, in my judgment, required where the continuous bath is to be given properly, for the patients must be able to sleep while they remain in the water. The tubs should be so placed that the supervision of the patients is comparatively easy and that the occupants cannot molest one another. Each tub should have a separate drain pipe, all of the pipes should be protected, the spigots and stoppers should be equipped with safety appliances which can be opened only by the attendants. Dr. Osswald could not carry out the plans for an ideal bathing equipment because of certain difficulties that were not apparent until after the installation of the plant. The only room available of sufficient size was in the basement and could accommodate from 8 to 10 tubs. After carefully considering the matter he decided to utilize it because it was accessible from violent wards without disturbing the other patients. The walls of the bath room are cemented to a height of 1.25 m., painted in pompeian red and above this a coating of plaster. The floor, which is of terazzo, is sloping and has cemented gutters for the tubs, which are placed with their heads toward the center of the room. The water supply pipes are covered with wood about 1.50 m. above the top of the tub, where they unite into a common inlet, and in order to prevent the patients from handling the stop-cocks they are enclosed in iron boxes specially locked; on these the corresponding words hot and cold are painted in prominent colors. The drainage is through a gutter. When the tubs are emptied care must be observed to prevent the backing of the water and flooding of the floors. This inconvenience may be avoided by placing a wooden grate between the tubs and a straw mat on the floor so that the patients may go to the toilet without stepping on the cold floor. Ventilation is

accomplished by an opening in the end wall so constructed that all draughts are avoided; this artificial ventilation is assisted by double windows constructed as follows: on the inner edge of the windows and projecting below them are placed sash windows considerably larger than the outer one, the upper part of this movable window is composed of alternate yellow and white opaque panes; the niche is of sufficient depth to allow the outer one to be easily opened; by means of this movable window an opening can be adjusted to meet the required demands. By this arrangement all direct draughts are avoided and by reason of the situation of the ventilators in the end wall the air is purified by suction and at the same time all disagreeable draughts eliminated. The ventilator has given a uniform temperature, being delightfully cool in summer and warm in winter, as well as preventing the condensation of moisture. The copper tubs which are in use have a deep curved brim around their upper margin and serves for the attachment of the invalid's table on which meals are served while patients are in the bath. This can be removed only by the attendants. In order to accustom patients to the bath or avoid their doing any damage, such as smashing windows or throwing missiles, a simple contrivance which can be adjusted to any bath tub has frequently rendered valuable service. This consists of an iron hoop bent to conform to the shape of the tub and clamped at the foot 1.5 m. from the top and having a number of brass buttons about 15 cm. apart to which a sail cloth cover with an opening for the head is attached; this is placed over the tub to prevent the patient from splashing water. Such an arrangement may be used as a hammock for invalid patients who have to be supported in the bath. These restraint baths are permissible only in cases of necessity and are of doubtful benefit.

In order to prevent scalding of the patients the temperature of the bath is always tested by an attendant before bathing; it should be from 35 to 38 degrees centigrade. In excited cases higher temperatures have proven beneficial. For bathing restless cases he is utilizing the bath rooms immediately joining the observation ward, or at times portable tubs on trucks are placed in the ward, so that the night attendant can supervise both. In exceptional cases two congenial patients may be placed in the same tub facing each other, separated by an invalid table; though this procedure is justifiable under certain circumstances it is hardly to be recommended as a routine practice. The cost of the plant was 3300 marks, "in view of the fact that we used the rooms at our disposal." A. P. H. and R. P. W.

Réflexiones à propos de cinq cas de psychose aiguë étudiés histologiquement. Par DR. A. DEROUBAIX. Journal de Neurologie, An. 9, p. 443, 5 Decembre, 1904.

In this article three cases are considered as acute delirium ending in death, one as paresis with absence of macroscopic lesions, and one as *mélancolie anxieuse* terminating in death by exhaustion.

After microscopic study it was found that this last case and one of the cases of acute delirium showed no difference in the anatomical picture ex-

cepting that the degree of arteriosclerosis was greater in the case of acute delirium. Both showed severe parenchymatous lesions, a neuroglia proliferation, but no mesodermal change nor inflammatory exudate.

The author has observed this same picture of parenchymatous change of varying degree, with neuroglia increase, in all of the psychoses, even chronic, and not paralytic, which he has studied. This fact corroborates the view of Alessi, Bischoff, Pritchard, and Alzheimer, that from a histologic point of view acute delirium properly called (mental confusion, generalized delirium) is a toxic lesion exclusively parenchymatous. It also corroborates the view held by Ballet, Klippel, and Thernite that from an etiological and histological point of view dementia præcox and mental confusion are similar. Further, the view of Deny that the dementia in hebephrenia is primary is confirmed.

Two of the cases of acute delirium, from a histological standpoint very closely resembled paresis, but certain somatic symptoms were absent in the clinical picture. In these were found sclerotic ganglion cells and the changes in the mesoderm which give to this disease the character of an interstitial lesion. While certain writers have found a perivascular infiltration, lymphocytes and even plasma cells, it may be asked if in this event the disease had not a paralytic base.

In proportion as the study of the histology of the cortex has advanced it has strengthened the view of Nissl that the influence of the leucocytes has been abused in lesions of the nerve centers and in the psychoses, and the anatomo-pathologic picture may be reduced to one of lesions of the parenchyma with neuroglia proliferation without involvement of the mesoderm, or of interstitial lesions, where the mesoderm was primarily affected, or the mesoderm and parenchyma simultaneously. In these last cases the mesodermal changes are shown in the proliferation and in the fibroblastic degeneration (as in the senile psychoses, *cérebrosclérose lacunaire progressive d'origine artérielle* de P. Marie, Grasset), or by the increase of fibroblasts and polyblasts (perivascular increase, polyblasts, plasma cells, mastzellen).

One may distinguish two extremes in the acute psychoses, two clearly marked forms, the paralytic or interstitial, and the non-paralytic or parenchymatous; and it is probable that in this last form we shall see established the clinical varieties corresponding to the clinical varieties of the chronic psychoses. In this manner the synthesis of Prof. Francotte will find an anatomo-pathologic basis.

It is also probable that a certain pathogenic unity underlies all these clinical varieties of the acute psychoses, in the sense that on the acute course and the fatal termination of a psychosis, just as in all the somatic affections, depends the action of the morbid agent, but especially on the lack of resistance, that is the natural or acquired weakness of the nerve centers, and that there is no other appreciable difference between the anatomical picture of the acute psychosis and the chronic psychosis.

W. R. D.

Zur Differentialdiagnostik negativistischer Phänomene. Von DR. OTTO GROSS. Psychiatrisch-Neurologische Wochenschrift, 10-17 Dezember, 1904.

Following are the author's conclusions: 1. The true katatonic (psychomotor) negativism is a complex of phenomena which form the expression of a series of psycho-physical processes, which are separated from the ego-continuity, have no connection with the psychical process of a conscious personality, and cannot be made accessible to introspective investigation.

2. The disposition for resistiveness depends upon the general feeling of helplessness and the increase of this by any kind of stimulus. It is the appreciable, introspective, explicable expression of the conscious personality. Processes for separation of the consciousness can expect only a moderate result on account of the disposition for resistiveness, as they produce symptoms which increase the feeling of helplessness.

3. The "psychic" or total negativism depends upon the union of the katatonic negativism and the disposition for resistiveness. A. P. H.

Book Reviews

The Effects of Tropical Light on White Men. By MAJOR CHARLES E. WOODRUFF, A. M., M. D., Surgeon U. S. Army, New York, Rebman Company, 1905.

The *idée-mère* of this book, according to Dr. Woodruff himself, was announced by von Schmaedel before the Anthropological Society of Munich in 1895. It is that the dermal pigmentation of man was evolved for the purpose of excluding the dangerous actinic or short light-rays, which destroy living protoplasm. With our newly acquired tropical possessions, and the extension of American "spheres of influence" into warmer climates, the subject must be most pertinent and suggestive. Indeed all Anglosaxondom and teutonism seems to have started in to carry Caucasian civilization into equatorial countries, so that Major Woodruff's timely and learned work will command the attention of all governmental, administrative, and medical classes.

The book is divided into 13 chapters, and the titles of these may, in a way, serve to indicate the data for, and trend of the theories advanced:

- I. Zoological Zones.
- II. Ether waves.
- III. Action of Ether waves on Protoplasm.
- IV. Difference between Plants and Animals.
- V. Natural Defences of Animals from Light.
- VI. Known Effects of Light on Man.
- VII. Actinotherapy.
- VIII. Blondness of Aryans.
- IX. Evolution of Blondness.
- X. Results of Insufficient Pigmentation.
- XI. Results of Migration of Blond Races.
- XII. Results of Migrations to America.
- XIII. Practical Rules for White Men in the Tropics.

In his first chapter Dr. Woodruff points out the general law of adjustments to more or less definitely marked isothermal and zoologic zones which, within these lines, produces similar characteristics, colorations, etc., in animals and man. For instance, *Simia*, it is said, means the snub-nosed one, and all Simians are tropical in origin, and human babies have snub-noses, the adult nose being narrower and longer in colder climes, and shorter and more open in the tropics. This is one reason for the pulmonary troubles of the negro transplanted to the north. The amount of pigmentation of the skin follows a similar law, although the theory

should account for the comparative uniformity of the aborigines in this respect, whether living in Alaska or in Mexico and Peru. But the pigment of the cells below the outer layer do undoubtedly exercise a discriminating office in excluding or neutralizing the rays of the upper end of the spectrum. It is, however, questionable if the greater morbidity to which albinism is subject is not generally due to the lack of iris and retinal pigment, seemingly a small part of the general pigment-endowment, which unfits the animal or man for vision which is the *sine qua non* of activity and usefulness. But whatever the theory adopted as to the method of producing injury there can be little doubt that the shorter ether waves have in the long run a more destructive effect on living tissues than those of the longer or heat rays. Proof of this is abundantly supplied. The injurious effect of light upon bacteria is in direct corroboration, and that the majority of animals live in comparative darkness points to the same law. Even white feathers and fur are relatively opaque, and black pigmentation has the function of a reducer transforming as it were a high-tension to a low-tension current. Moreover, men have usually lived in dark houses, though again it must not be forgotten that the action of light upon the retina destroys its sensitiveness, diminishing the usefulness of the man, and even producing "moon blindness," etc. The old name for migraine was "sun-pain," and sufferers shrink from light, but migraine is due to errors of refraction, and light is avoided because it induces function and greater eye strain, not because even tropical light is unpleasant or harmful to an emmetropic eye. It would be interesting to know what proportion of hay-fever patients are blonds. In Chapter VII there is a capital epitome of medical literature on the effects of tropical light on white men.

Primitive man was brunet, not black, and so were the early Britons, but the Aryans were blonds, and they are conquering the brunets everywhere.

Practical results are reached in the conclusion that final exhaustion follows the first few months of stimulation of the Caucasian transplanted to the tropics. If this apepsia and debility increases Dr. Woodruff commends the moderate use of alcohol in these conditions. Neurasthenia, amnesia, sun pain, other neuroses, and even insanity often result from continued residence, all ultimately traced to the lack of protection from too much light. The general conclusion is reached that suicide depends somewhat upon the amount of light, the time of the year, etc. That the insanity rate in the Philippines is not greater is due to the fact that upon the approach of extreme neurasthenic and threatening symptoms the patients are sent home to the United States. All of this, of course does not prove that in our cloudy and northern climes there may be too little sunlight and that disease does not follow close upon this too little.

As regards the relative amount of sunshine the rule is deduced that, "the death-rate of a place is proportional to its sunshine, and inversely proportional to its latitude—other factors being eliminated," and the

people of Tacoma, Seattle and this region attribute their exuberant health, small death-rate, and morbidity, to every cause except the correct one—protection from sunshine. The order therefore is, Delay the destruction of the dwindling blonds. In the tropics opaque clothing is demanded, the color being comparatively immaterial, so it reflects as much heat as possible. Opaque head coverings, and darkened rooms, the midday siesta, etc., are also necessary. The best age of those going to the tropics is from 20 to 30, or 35, and none over 50 should think of life there. Prompt invaliding or pensioning are advisable upon ingravescence of neurasthenic symptoms. Dr. Woodruff laments the great ignorance and lack of interest in the subject of tropical hygiene, and the fact that the valuable experience of hundreds of physicians returning to the United States, is lost, and not placed at the service of the new men taking their places. The last words of the book require literal quotation:

"It is hoped that this investigation will take us a step nearer to the solution of that problem which is now confronting the American people as well as European nations—*The Conquest of the Tropics*, to give to its peoples that security of life and property, and that civilization and prosperity, which they cannot attain by their own unaided efforts, in an unsuitable form of government forced upon them by the Monroe Doctrine for our own welfare."

G. M. G.

Diseases of the Nervous System. By L. HARRISON METTLER, A. M., M. D., etc., (Chicago: Cleveland Press, 1905.)

The value which this work undoubtedly possesses as a treatise on clinical neurology is somewhat counterbalanced by the author's neuronc dogmatism. One takes alarm first in the preface, where the opening sentence concisely asserts that "The Neuron Doctrine is now an accepted fact;" and when further it appears that in nearly a thousand pages following, the subject of nervous diseases is considered entirely "under the brilliant illumination" of this "accepted fact," which, moreover, is "universally acknowledged to be scientifically accurate" (!), one instinctively turns the pages for evidence. In lieu of evidence, however, one has to be content with the *ipse dixit* of the author, who "feels that the time has arrived for the frank recognition of this great doctrine, not merely in histology, but also in the greater field of neurology." It is, therefore, an unexpected consolation to find the author conceding, a few pages later, that the neurone theory "is not put forth as an infallible truth. It is open to future modification, and if need be to entire annihilation. . . ." So there is still room for those who have hitherto been unable to regard the hypothesis of Waldeyer as an established fact. To set authority against authority, we mention the remarkable critique of Nissl,¹ who in 470 pages of unequivocal language attacks the theory which in its widespread influence he considers "ein Unglück und eine Gefahr für den Fortschritt in unserer wissen-

¹"Die Neuronenlehre und ihre Anhänger," 1903.

shaft;" also Bethe's² recent statement of the present position of the neurone doctrine. These discussions will suffice to show that the phrase "universal acceptance," when applied to the neurone theory, is, at least, unfortunate.

The author reasonably criticises certain methods of classification in nervous diseases, such as those which treat separately affections of the brain, cord, and peripheral nerves, although allowance must be made for the obvious didactic advantages of such treatment. His own division of nervous maladies into *neuronic* and *non-neuronic* is quite as forced, and quite as open to criticism. It is simply an unhappy revival of *parenchymatous* and *interstitial*, and by the arbitrary metamorphosis of these two terms the author believes that the question has been wonderfully clarified. But here we must let him speak for himself. "Like a mariner without a compass, we have been buffeted about upon the parenchymatous and interstitial, the nuclear and protoplasmic, the fibrous and cellular, the vasomotor and molecular waves until we have almost despaired of ever reaching *terra firma*." The *terra firma* (!) which he has reached is that afforded by the neurone hypothesis. Neuropathology, unfortunately, is not yet sufficiently advanced to furnish unqualified support to the new-old classification.

Tabes and paresis are torn apart, the former falling among the neuronic diseases, while paresis is put down as a non-neuronic affection. The author states, however, that the nature of the primary lesion, in both maladies, is still undetermined, and that it is highly probable that a common initial process will be found to underly the two diseases. When, moreover, he adds as his belief that "the primary process is a degenerative one in the nervous elements of both diseases," one is at a loss to account for the epithet "non-neuronic" as applied to paresis.

In considering the subject of cerebral localization, reference is made to the work of Sherrington and Grünbaum, and their conclusions regarding the extent of motor representation are again given credit. Nevertheless, the author states that "the motor form corresponds with the central convolutions on either side of the fissure of Rolando, the adjoining parts of the frontal and parietal lobes, the paracentral lobule, and the supra-marginal gyrus." This view of a motor cortex in man occupying a wide indeterminate area on *both* sides of the central sulcus, is essentially that of thirty years ago, and has recurred inexplicably in text-books, in spite of the findings of Betz (1881), Hammarberg, Cajal, Sherrington, and Grünbaum, and others, which show that the precentral convolution alone, with its immediate antero-superior connections, is specifically motor.

As a text-book of neurology, the work furnishes a thoroughly adequate consideration of the symptomatology, etiology, diagnosis, and treatment of nervous diseases (vide p. 137 for qualifications of a physician to be suc-

² "Der heutige Stand der Neuronenlehre," Deutsche Med. Wochenschr., 1904, H. 33.

cessful in handling hysteria). The book tends, however, to bulkiness, and supplies an abundance of interesting observations and rhetoric which might be spared in an ideal practical treatise.

C. B. F.

Geschlecht und Kinderliebe. Beitrage zur Lehre von den Geschlechts-Unterschieden. Heft. 7-8. Von DR. P. J. MOEBIUS. (Halle: Carl Marhold, 1904.)

This most recent number of this series is perhaps even more interesting than its predecessors. The book occupies 72 pages and is divided into three parts, the first treating of mother-love in animals and man, the second is a discussion of Gall's teaching, and the third treating of mother-love and skull size. The word *kinderliebe* is explained at some length and is probably best translated by mother-love, as it means love for children rather than love of children, which would be its more exact philological equivalent. Many instances showing the strength of this instinct, or "trieb," as Moebius prefers to call it, are given in the first part, and these are most interesting. The second part is given up to discussing the theory of Gall that this instinct was localized in the upper part of the occipital region, instances in proof of this being given in the third part, where a number of illustrations afford comparison between the male and female skulls in a number of animals. In these it is seen that while the skull of the male is invariably larger than that of the female, in the latter the portion of the skull above the occipital ridges is comparatively larger than in the skull of the male. Like all of the writings of Dr. Moebius, the style is delightful and a perusal of this work is recommended.

W. R. D.

Half-Yearly Summary

CALIFORNIA.—*Agnew State Hospital, Agnew.*—A number of improvements have been recently made at this hospital, it now being able to better provide for the sick insane than ever before, and much greater freedom is now given to all of the patients. All of the wards and the administration building have been thoroughly fitted out with new plumbing. A new cottage to accommodate 100 patients has been completed; also a steel water tower, and a new gas plant; besides many minor improvements having been made. There is in contemplation for early construction a new operating room and separate buildings for men and women which will be fully equipped with all modern facilities for the treatment of the acute insane.

COLORADO.—*Colorado State Insane Asylum, Pueblo.*—The last annual report, covering two years ending November 30, 1904, reports the erection and completion of two cottages at the men's department to hold 100 patients each; a wing at the women's department to hold 100 patients, an amusement hall, the installation of an electric light plant, a cold-storage and ice-making plant, and improvements in the kitchen and bakery. All of these changes have been carried through and are now practically finished. Other minor improvements are an addition to the laundry machinery and new steam tables, meat cookers, and urns, to the kitchens of both departments. It is of interest that the frame structure which was the original asylum, and which was near the location selected for the new wing of the women's building, has been removed to another part of the grounds, and is used as a carpenter shop and sleeping quarters for outside employees. The total number of patients remaining November 30, 1904, was 737.

ILLINOIS.—*Maplewood, Jacksonville.*—A training school has recently been established here. It has been duly incorporated and authority has been given by the Secretary of the State of Illinois to issue diplomas. The plan and scope of the school work is in accord with modern advanced ideas.

INDIANA.—*Central Indiana Hospital for Insane, Indianapolis.*—There are at present in this hospital 1982 patients. A number of improvements have been made, chiefly the installation of a new boiler plant, which has been in satisfactory operation for several months, and an addition has been made to the laundry. Numerous minor improvements have also been made. The medical colleges of Indianapolis, as in former years, pre-

sent a course of lectures to their students which were illustrated by the patients in this hospital, and the pathologist also gave a course.

—*Northern Indiana Hospital for Insane, Longcliff.*—There were in this hospital October 31, 1904, 946 patients. A number of improvements have been made, among these being a mechanical work shop of stone having a slate roof and a finished cellar 30 x 50 x 18 feet. It was erected at a cost of a little over \$2000. A store house has also been built near the railway siding, also of stone with a slate roof, and having an 8-foot basement. The size of this is 40 x 100 x 12 feet. It is equipped with elevator, scales, oil pump, portable shelving, and cost \$4962.60. An extension has been made to the employees' dining-room, adding 16 x 48 feet, in the form of a gallery suspended from the trusses over the north end of the central dining-hall. It is well equipped with sink, scullery tables, plate warmer, and serving benches, and cost \$450.00. A number of buildings have been added to the farm equipment, consisting of a stone cattle stable, bull stable, two brick silos, and granary. The equipment provides a corn mill, a root cutter, an ensilage machine, and an electric motor properly wired and equipped to afford 10 horse power. These additions cost \$3700. Refrigerating apparatus has been installed, so that at present there are six cooling rooms 10 x 12 x 16 feet, the total cost being \$4000. A new brick bakery, having slate roof and steel ceiling, 30 x 60 x 12, has been built and equipped with a ten horse power steam engine, a four-barrel dough mixer, a dough break, a flour elevator, sifter, a substantial, continuous-fire oven 11 x 13 feet, troughs, benches, bread racks, etc., at a total cost of \$4000. A coal shed, 75 x 85 x 17 feet, has been built adjacent to the boiler room. It is of brick with metal roof and is arranged for two railroad tracks passing through the building; has chutes into the boiler room, and has a dressing room for firemen. The total cost of this was \$4000. Automatic stokers have been installed in the boiler room. The laundry annex of two stories, 30 x 36 feet, of brick and with a metal roof, has been built at a cost of \$1500. Tile floors have been placed in a number of the bathrooms, sculleries, etc.

—*Neuronhurst, Indianapolis.*—During the past year a new hospital has been built with capacity for fifty private patients. The plan, equipment, etc., is thoroughly modern. The course in the training school for nurses has recently been lengthened and is now three years instead of two as formerly.

IOWA.—*Mt. Pleasant State Hospital, Mt. Pleasant.*—A number of improvements have been made. The heating and water plant has been thoroughly overhauled and is now giving entire satisfaction. A new laundry and bake shop have also been installed. Many improvements are contemplated in the landscape gardening, so that an improved appearance of the grounds will result. The interior of the building will also be overhauled and new cisterns will be built. The experiment has been made of

employing women nurses among the male patients, and so far considerable improvement in the service has resulted.

—*Cherokee State Hospital, Cherokee.*—The last legislature appropriated \$70,000 for the erection of a fire-proof cottage for patients, and it is expected that this will be ready for occupancy by July 1. The third artesian well is now being drilled, and with its completion the water supply of the institution will be ample for a considerable period. Much work for the improvement of the grounds is contemplated for the present spring and summer. This includes considerable grading, the making of cement walks, and planting of ornamental trees and shrubbery. Four and six inch water mains will be laid, and when these have been completed all of the hospital buildings will have ample fire protection.

KENTUCKY.—*Eastern Kentucky Asylum for Insane, Lexington.*—There is at present under construction a bowling alley which will cost \$1400. A contract for placing nearly 800 feet of iron fence in front of the pleasure grounds has been awarded and the work will shortly be begun. Two 35-kilo Watt generators connected to two 60-horse power high-speed engines were installed in the engine room in December, the cost of these being \$3400.

MARYLAND.—*Springfield Hospital, Sykesville.*—There are at present under construction two new cottages, one at the women's group for convalescent patients and the other at the men's group for epileptics. The cottage for convalescents will be named the Warfield Cottage in honor of Governor Warfield. It will be built in conformity with the "open-door system" already established at Springfield. The accommodation will be for 75 patients. A number of home-like features have been incorporated in the general plan. The first story will include the large day-room, with handsome recessed fireplace and sun parlor, the dining-room, serving room, toilets, etc., and a spacious veranda 14 feet wide across the entire front. The second story will contain the dormitories for 70 beds and 8 private rooms, besides dressing rooms, baths, etc. The third story will provide the nurses quarters. A feature here will be the large social hall for the nurses. The building is colonial in design. It will be built of red brick laid in Flemish bond, with white marble and terra-cotta sills, arches, etc. It will be heated by hot water, lighted by electricity, provided with the most approved plumbing arrangements, with ample stairways, fire escapes, etc. The cost of the building and equipment will be about \$40,000. The cottage at the men's group will also be of brick, and will have a capacity for 75 patients. There will be a large day-room, dining-room, and kitchen on the first floor with dormitory on the second. The separate kitchen and dining-room for the epileptics will afford isolation for them, and insure better control of their diet, a *sine qua non* in the treatment of epilepsy. The cost of this building, including equipment, will be about \$20,000. In addition to these two buildings, the Buttercup

Cottage for female epileptics has been enlarged to the extent of twenty-five more beds. This is a frame building, and the cost of addition and equipment will amount to \$2000.

—*Sheppard and Enoch Pratt Hospital, Towson.*—The hydrotherapeutic plant of which mention was made in the last report has been completed and will be formally opened April 26, at which time the members of the Medical and Chirurgical Faculty will be in attendance at the annual meeting in Baltimore. The faculty will be invited to attend the opening, and an address will be made by Dr. Simon Baruch, of New York. The rooms present a very handsome appearance, the terazo floor and white enameled walls making everything very bright. The lounging room has a wainscoting of a rich red, which is very pleasing to the eye, and the colored rugs and couches of the same give a sufficiency of color to afford a pleasant contrast to the white walls which surround the patient while going through the bath. There is light gymnastic apparatus, such as wall weights, rowing machines, etc., and apparatus for vibratory massage to be used in conjunction with manual massage.

A part of the grounds near one of the creeks which flows through the hospital grounds is being excavated to form a lake, primarily as a reservoir for water to supply the boilers and laundry and the pool in the hydrotherapeutic establishment. It is located near the edge of the woods not far from the main drive through the hospital grounds, and will eventually be an object of considerable beauty. The shape is irregular and the total area covered will be about two acres.

An addition to the engine house has been built for the charging and storage of electric automobiles.

MASSACHUSETTS.—*Medfield Insane Asylum, Harding.*—An entire new power plant, in a new building and new location, has been built and machinery installed during the past year. Its location permits the delivery of coal from the vessel at New Bedford to the boiler doors without rehandling. Six new boilers, two large engines coupled to new generators, with new pumps and heating mains, have been provided. This plant is 1200 feet distant from the first point of distribution. It is calculated that \$5000 a year can be saved with this new plant in the running expenses of this department, which furnishes water, heat, light, and power.

A new building to provide for one hundred disturbed male patients is now in process of construction. It is, with the exception of the roof, of fire-proof construction. The walls are of red brick with yellow sand-stone trimmings. The partition walls inside are of brick and terra-cotta. The floors and stairs are of concrete and iron. The dining-room and shower baths are located in the basement. Two lavatories with closets and set bath tubs are provided for each floor.

Contracts have just been signed for an addition to the large general dining-room for women. This will be used for female employees. Work will begin at once. Alterations will be made in the third story of the

two general dining rooms, providing 44 more beds for employees that work outside of the wards. Two wooden cottages, each with a capacity for 18 patients, will be begun at once. These are for tuberculous patients, and one will be for male patients, the other for women.

The men's home for nurses and attendants employed on the male side was occupied during last month. It provides rooms for 65 attendants, has a large general sitting and reading room with writing room leading from it, and a small reception room. There is also a suite of rooms for an assistant physician, comprising a library, a sleeping room, and private bath, and another suite for a male supervisor. The basement is utilized for a pantry for preparing food and washing dishes for sick attendants, a large smoking and billiard room, with open fires, and a range of shower baths. In addition to these shower baths in the basement, there are five set tubs in the building. Some rooms are large enough for a man and his wife to occupy, and from six to ten married couples will be domiciled in this building.

—*Boston Insane Hospital, New Dorchester.*—Ten new wards have recently been erected at the women's department and have been occupied for several months. These have been very successful in relieving the crowded condition which had existed heretofore, and the new buildings have come up to all expectations. Plans are now under way for the construction of a hydrotherapeutic plant.

—*Massachusetts Hospital for Epileptics, Palmer.*—At this hospital the number of patients has now reached 500. The two new farm buildings have been occupied during the past few months and are proving to be well adapted to the purposes for which they were erected. Several minor extensions have been made during the winter in the green-house plant, a new ice house and several other small buildings have been added. It is intended, if an appropriation can be obtained for the purpose, to construct a fire-proof building capable of accommodating 100 men; this will contain a number of single rooms and will complete the classification needed in this direction, and it is hoped that in another year a similar building may be obtained for the women's group. Hereafter the extensions will mainly be by small cottages for single family groups similar to those that are already in use. Plans are under way for the removal of the barns which are at present in the vicinity of the main group for a distance of about a quarter of a mile to the vicinity of the farm group barns. One of these will be placed on a foundation, which is already prepared for it, and will be used as a storage house.

—*Massachusetts Hospital for Dipsomaniacs, Foxboro.*—At the present time there is a strong movement for the abolition of this hospital. Two propositions have been made for the use of the building, one being to give it to the Massachusetts Board of Charity to be used for crippled and deformed children; and the other to give it to the State Board of Insanity

with \$100,000 for the construction and furnishing of new buildings in order to meet the demand for 300 to 500 new beds which is made each year on this Board.

—*Westborough Insane Hospital, Westborough.*—The report of this hospital for the year ending September 30, 1904, states that there were remaining at the end of the fiscal year 842 patients. The training school graduated 23 nurses during the year, and consideration is being given to the advisability of extending the course of training to three years. The building for chronic disturbed patients, which has been under construction for some time, has been completed and occupied, and is admirably adapted to the needs of this class, making the nursing easier and making the patients themselves more comfortable than was formerly possible. Two of the cottages for women nurses have been completed and occupied, and a third is almost ready. There is at present being erected a building for acute disturbed cases; it is of concrete construction and practically fire-proof. It is so placed that the noisy patients will not disturb the patients occupying other buildings. Plans for buildings for male employees and nurses have been made and approved. These are similar in plan to those that are now used by the women nurses. A house for the superintendent is nearly completed. An operating room has also been built and is occupied. The fire-proof building for the pathologist will be begun when the old Peters House can be torn down; the employees now sleeping in this building being moved to their new quarters. The electric lighting plant has been greatly improved.

MICHIGAN.—*Oak Grove Hospital, Flint.*—This hospital has, in course of preparation, plans and specifications for a building for acute cases (men). The building is to be attached to the main group by a glass-enclosed corridor and accommodations are to be provided for ten patients. A special feature of construction is the direct opening of rooms for patients from a quadrangular room, 17 x 26 feet, lighted by a skylight. This arrangement permits all patients to be under the close observation of the night nurse at the same time.

MISSISSIPPI.—*State Insane Hospital, Asylum.*—The staff of this hospital has been increased by the appointment of a third assistant.

MISSOURI.—*St. Louis Insane Asylum, St. Louis.*—The prospects for relief of the overcrowded accommodations of this institution is becoming a real factor to the extent that a bond issue of \$9,000,000.00 is to be voted upon by the public, April 4: \$1,000,000 of this amount, if passed, is to be used in the erection of modern accommodations for the insane poor of this city. At present the city's insane are very much divided, there being 655 in the City Insane Asylum, 832 in the City's Poor House, and 97 in State Hospital No. 4. More recently the interest manifested by the medical profession and societies in the management of the eleemosynary insti-

tutions has assumed a more tangible basis; advisory and consulting committees have already been formed, the result of whose deliberations is to be submitted to the city officials. At present all of these institutions are departments of the health department, which is under the direct control of the health commissioner.

NEW HAMPSHIRE.—*New Hampshire State Hospital, Concord.*—In compliance with the Act passed by the state legislature in the year 1903 providing for state care of all the dependent insane of the state within a specified period, the legislature of 1905 made an appropriation of \$200,000 for the erection of a hospital building for acute insane as well as the care of the feeble and sick among all classes of the insane. The legislature also provided for the installation of six fire-proof stairways in the old buildings, for a house for employees, and for a storage building. Work on the hospital building will be begun at the earliest possible moment in the spring. The hospital building will have a capacity of 150 patients. It will be two stories in height and will have a central administration building containing rooms for a resident physician, also for the head nurse and assistant nurses. It is proposed to place the hospital building under the entire charge of women nurses with such orderlies for assistants on the male side as may be necessary. This building will be connected by the main buildings with a subway, but will be entirely detached in every other respect, and will occupy a sunny exposure facing the south about 250 feet distant from the nurse's home. The hospital building will be the first of a series of additions that will ultimately provide for the reception of all the dependent insane in the state.

NEW JERSEY.—*New Jersey State Hospital, Trenton.*—There is at present pending before the legislature a bill asking for an appropriation to make considerable extension to the present buildings. The continued crowded condition of this hospital renders such a step necessary.

NEW YORK.—*Buffalo State Hospital, Buffalo.*—There are being completed upon the grounds of this hospital four buildings: a residence for the medical superintendent; a residence for the medical staff; a home for one hundred men employees, and a chapel and amusement hall. These four buildings are of brick, and will cost about \$104,000. The three upper floors of the building, now occupied by the medical officers and the chapel, will thus be available for patients, and it is expected will accommodate about 150.

On the evening of March 6, 1905, at 11 o'clock, a fire broke out in the second floor of the three-story building adjoining the Administration Building, evidently having caught from the waste in a dust shaft, and working under the floor. The building is of three stories and contained about 166 patients, who were roused and marched quietly from their wards through the corridors connecting the adjoining building in which the fire did not exist. The wards were emptied in a few moments without injury,

confusion, or excitement, largely due probably to the regular daily fire drill which has been practiced. The fire was extinguished after cutting through the floor.

—*Long Island State Hospital, Flatbush.*—This hospital occupies buildings which were built by Kings county half a century ago and ten years ago leased to the state under the provision of a bill which permitted a lease for five years and gave permission of a renewal for a further period of five years. As this lease expires in October next, and the lease could not be renewed except by further legislation, some apprehension has been felt both by the State Commission in Lunacy and by the friends of the inmates of the institution that it might be necessary that the buildings be given up and the patients scattered among other state asylums. A bill will probably be introduced into the legislature in the nature of an enabling act, giving power to the state and city authorities to make an exchange of property. The proposition is made that the House of Refuge on Randalls Island, which is practically under state control, be exchanged for a portion of the property of the city now occupied by the Long Island Hospital in Flatbush. This was first suggested by Mr. Alexander E. Orr, who is president of the board of managers of the House of Refuge, and president of the board of visitation of the Long Island State Hospital.

—*Manhattan State Hospital, Central Islip.*—Since the last report a number of improvements have taken place at this hospital. A new amusement hall has been completed and occupied. It is of wooden pavilion structure and has a seating capacity of 1200, one end being arranged with a stage for theatrical purposes, the other arranged for religious purposes for the Catholics and Protestants. The administration building is nearing completion. This building is situated midway between the two colonies and has three stories, the first floor being used for administrative purposes, and the remainder of the building for steward's quarters and clerk's quarters. Plans and specifications have been completed and bids advertised for the construction, heating, plumbing, and electric lighting of the new dining-room and attendants' home. The first floor is to be used for a dining-room for the acute patients, both male and female; the second and third floors will be for quarters for 80 attendants and nurses. The buildings will be situated close to the acute service, the dining-rooms being connected by corridors with both the male and female departments. This will insure a separate dining-room for acute patients, will allow of special service, and will be convenient in many other ways.

—*Manhattan State Hospital, East, Wards Island, New York City.*—Since the completion, in the autumn, of the new operating room in the East Building, the gynecological service has been extended and operations upon female patients are now performed from two to three times a week. Major surgical operations are also regularly performed upon the male patients with most gratifying results.

The camp for the tubercular patients has been again successfully maintained throughout the winter, still demonstrating its usefulness as a means of continuous isolation, and at the same time affording the employment of a therapeutic measure of the most valuable character.

Recently a number of wards including the hospital for sick and bed-ridden patients have been renovated, thus improving the sanitary conditions and adding greatly to the comfort and cheerfulness of the surroundings.

—*Manhattan State Hospital, West, Wards Island, New York City.*—The medical work of this hospital has been steadily advancing along the lines set forth in the last Half-Yearly Summary. Three or four staff meetings are held regularly each week for the consideration of recent admissions, at which time preliminary study and diagnosis of cases are made. A few weeks following the admission of each patient a written summary is presented, covering the case in all its bearings, when a final diagnosis is made.

Once each week convalescent patients are considered at staff meetings, their histories are carefully gone over, and conclusions formulated as to the conditions under which they may be discharged, or whether their cases should remain longer under observation. This method of carrying out the psychiatric work enables all members of the staff to become familiar with every patient.

The mechanics' shop on the first floor of the men employees' home has been transferred to other quarters, and the room has been appropriately finished off and converted into an industrial department for the women patients. Here patients are brought who are not inclined to be very active in the matter of employment. They are placed under the direction of nurses who endeavor to instruct them in the various branches of work. It thus becomes an important element in the treatment of these cases. Cases of dementia præcox who are apathetic and resistive are here encouraged and gradually taught to employ themselves, and for the short time this department has been open, the results have been gratifying. In this industrial department about 400 women patients are now employed daily.

Owing to the overcrowded condition of this hospital the State Commission in Lunacy suspended admissions from February 8 to March 15, except a limited number for the purpose of study. All other patients were committed to the Manhattan State Hospital, Central Islip.

The special work has been continued as heretofore by Drs. Kemp, Rose, and Graham-Rogers in gastro-intestinal investigations, and Dr. Thomas Satterthwaite has given demonstrations of the use of Nauheim-salt baths with the exercises prescribed in heart difficulties. Dr. Robert T. Morris gave a clinic on abdominal surgery. These gentlemen have shown much enthusiasm in their various departments, and are giving valuable aid in the medical work of the hospital.

We have inaugurated a systematic course of investigation into gastro-intestinal troubles, charting our findings in all cases admitted, and here-

after more thorough attention will be given to the study of auto-intoxication.

The gynæcological work has been carried on as heretofore by Dr. LeRoy Broun, assisted by Dr. Rawls and the hospital staff.

The two frame pavilions constructed last year for use as camps for tuberculous patients have been occupied during the winter weather, and proved to be comfortable and satisfactory for outdoor treatment. The continuous bath has been used more extensively for cases of mental excitement, and the findings show beneficial results in nearly all instances. At the present time there is a patient undergoing this treatment who has been in the continuous bath for weeks, both day and night. This case is an unusual one, but already shows some improvement. In this connection it seems proper to state that by the use here of the hydrotherapeutic treatment the administration of sedative medicines has been materially reduced.

A new solarium built adjacent to the east side of ward 17, similar in all respects to the one built to connect with ward 21, is now completed. It is one story high and has a capacity of 40 patients. It makes a cheerful ward and fully meets the requirements of the hospital for that class of patients.

The new amusement hall was opened on February 9, and has a seating capacity of about 800. Several vaudeville entertainments have already been given, and three or four weekly dances and concerts are held for the patients. This hall meets a want long felt at this institution, and its usefulness is becoming more and more apparent. A most excellent stage, constructed on modern plans, and supplied with suitable scenery, is built at one end of the hall.

At the present time a large addition is being constructed at the south end of the staff house, and certain alterations in the old staff house are being made. When completed, this will give much more room for the accommodation of the large staff of officers. In the meantime, the majority of the members of the staff are finding quarters in the superintendent's former residence at the south end of the island.

The following improvements have been completed or started since October 1, 1904:

A new amusement hall and an addition to the superintendent's cottage have been completed, the heating, lighting, and plumbing being installed by the hospital.

A cement conduit for steam and return pipes from the annex to ward 34, under way on October 1, has been completed.

A fire pump, 12 x 8 x 12, has been installed in the power house and the necessary lines installed to connect it with all buildings over two stories in height, to provide better fire protection for these buildings.

Two steam tables have been purchased and installed in camps C and D, and one has been ordered for the new solarium at ward 17, and an old one has been installed during this time near the solarium at ward 21.

A large addition to the staff house is now being erected, the construction, plumbing, and heating being done by contract and the electric wiring by the hospital.

A new solarium at ward 17, which was under way on October 1, has been completed and the hospital has installed heating and electric wiring.

—*Rochester State Hospital, Rochester.*—This hospital is just completing a group of buildings, consisting of a new central boiler house, store and bakery, and an extension to the laundry, an infirmary building for 300 patients, and a building for 350 chronic patients; also a central hospital building, equipped with a complete system of baths, electric appliances, dispensary, operating rooms, etc., for the treatment of acute cases, and arranged in six cottages with 10 small wards to accommodate, in all, 50 men and 50 women patients. Located in the center of this group is a large new kitchen so arranged as to easily distribute food to the different dining-rooms through the corridors. The rooms on the mansard floor of one of the old buildings are being repaired to be occupied by women nurses.

—*Rome Custodial Asylum, Rome.*—During the past half year a training school has been established for the attendants which is entirely distinct from that for the nurses. The object of this school is the training of the employees in the proper physical care and educational methods applicable for the feeble-minded, more especially the so-called custodial cases, and the training that is required of an attendant for chronic cases, such as the bed-ridden paralytic, which are met with outside of hospitals. A merit system has been instituted among the inmates and a daily record is kept of all the brighter patients, who are the ones placed on this merit system. These are rewarded for good behavior and good work, and are given demerits for bad work and refusal to work. Each male inmate's labor is valued at 15 merits per day, and each female's labor at 10 merits per day, a merit representing one cent. At the end of each month each inmate's account is balanced and a little cash is given the inmates if any is due them. All of the inmates on this system pay for their own clothing through merits and for any luxuries which they have.

Dr. Bernstein, the superintendent, states as follows:

"During the past year we have become convinced that it is very desirable that at least in the custodial institutions for feeble-minded, the two sexes be separated and placed in different institutions, as we are very sure as a result of such separation both males and females could practicably be allowed much larger liberties about the institution, all being oftener thrown on their own resources as regards self-reliance, as a result of which their judgment would be much developed and they would be able to do much better work about the institution, and thereby contribute much more toward their own support.

"As a result of such separation of sexes, with the ground sufficiently extensive about the institution, much more could be accomplished in the

way of self-support, and this, too, with a much smaller percentage of employees than is at present required. In this institution we are convinced that the farm-colony system should be adopted in connection with future provision for an increased number of male inmates, placing from 20 to 30 of the brighter males on each farm with a farmer and wife, giving these brighter male inmates considerable of the comforts of home life, by isolating them from the large mass of lower-grade cases and at the same time increasing the facilities for these brighter inmates to contribute toward the support of the lower-grade cases in the farm products which could be produced on such farms. We feel that this farm life would also be decidedly beneficial to the brighter cases, increasing the variety of interests, and thus keeping them from mischief, contracting bad habits, etc.

"Our population at the present time is 710. Besides this there are 600 feeble-minded waiting admission to this institution, which cases are at present, contrary to law, cared for in county, town, and city almshouses. In addition to this, there are also about 200 cases in the Syracuse State School, which should be cared for in a purely custodial institution.

"In addition to the above, we have on file at the present time 350 applications awaiting admission, most of which cases are at present cared for in homes, orphanages, schools for the delinquent, etc."

—*Utica State Hospital, Utica.*—The medical work of the hospital has progressed very satisfactorily along the lines pursued by the Pathological Institute. Two members of the staff availed themselves of the opportunity to take a course of instruction at the institute. The duration of each course was three months and proved a great assistance to the physicians in their work.

It is proposed to utilize the present quarters of the superintendent and staff in the administration building for patients. To enable this change to be made a superintendent's residence and staff building are being erected on the hospital grounds, and the construction is well advanced. The buildings will probably be ready for occupancy some time during the coming summer.

The new central kitchen is completed and is a very great improvement, and one which has been long needed.

Two or more additional buildings for patients will probably be erected soon and the capacity of the institution increased by 500, making a total of 1600.

—*Willard State Hospital, Willard.*—The hospital has been unusually free from infectious disease during the past six months. Diphtheria, which has been more or less prevalent since 1899, made its appearance in one instance during the present month (March), which is the first case since last July, the hospital having been entirely free from it for about nine months. An epidemic of measles broke out February 21, was confined largely to the south wing (women) in the main building, and in the course of two weeks thirteen patients and three nurses developed the disease.

These patients were at once transferred to the Isolation Hospital, which was completed last November. During the present winter there have been five cases of erysipelas. Patients suffering from tuberculosis, who had been living in tents during the summer season, were moved into the wards set apart for them in permanent buildings in December, the weather having become too severe to permit of their longer treatment outdoors. It is expected that they will again occupy the tents before the end of April.

There are now two agricultural colonies, one situated at Hillside, containing 25 patients of the farming class. These colonies have been adapted from old farm houses remodeled and enlarged, and are situated about a mile from the main building. The total acreage of Willard being something like fourteen hundred acres, the necessity for such colonies is at once apparent. Apart from the convenience which they afford, by virtue of their location, respecting the farm work, a more natural condition of living is secured to the patients. It is in the direction of the "family care" or "boarding out" plan. Another colony should be established at the Lake Farm during the current year.

A contract was recently let by the Lunacy Commission for the installation of galvanized iron cold air ducts in the basement of the main building, and this work is now under way. The object is to secure better ventilation to all of the wards in this building by supplying the indirect-heating system with air brought directly from the outside instead of from the basement itself. A contract has also been let for the installation of new plumbing at The Pines, but owing to a dispute which arose regarding it, there has been some delay in commencing the work. A number of minor improvements have been made during the past six months, among which may be mentioned the erection of a refrigerator in the mortuary; new metal stanchions in the cow barns; a disinfecting washing machine added to the laundry equipment; a new dough-mixer for the bakery; steel ceilings for the central corridor of the main building and the operating rooms.

—*The Craig Colony for Epileptics, Sonyea, N. Y.*—The census of the Craig Colony for Epileptics on March 13 last was 1002, and by next June it should be 1050.

Two new cottages for 20 to 25 patients each should be opened in the women's group in May.

The addition to the hospital now going up, at a cost of \$16,000, is almost ready for occupancy. It contains a large library room for medical books and scientific publications; a fire-proof vault for hospital and medical records; additional offices for members of the medical staff; consultation and waiting rooms for patients; and a modern up-to-date hydrotherapeutic room fully equipped for the purpose. It is expected that the latter will prove a valuable adjunct to other forms of the treatment now in use.

The colony is interested just now in an autopsy bill that is before the legislature. The purpose of the bill is to give the colony the right to make autopsies on the bodies of all indigent patients who die at the colony, and who have been supported therein wholly at the state's expense.

The state architect has completed plans for six additional cottages to be built this summer, the six cottages to hold approximately 200 patients. The largest of them will have 40 persons in them, the smallest 20. The per capita cost of construction is not to exceed \$450.

Preliminary preparations are under way for celebrating, next August, the tenth anniversary of the founding of the institution.

—*Bloomingtondale Ten Years at White Plains, N. Y.*—The year 1904 completed the first decade that Bloomingtondale has been at White Plains. It left an old fashioned institution in New York, comfortable but not convenient, which represented the gradual accretions through 75 years of unsystematic growth, where good work was possible, at an unnecessary expense of effort, and where new departures were contra-indicated by a prospect of abandonment of the site. While the departure was postponed for various reasons, time was gained to fully mature, and eventually to carry out at White Plains, plans for a modern model, and convenient establishment in a new neighborhood. Ten years of good work done at the new place justifies the change of location, and the manner of the new development. At the new place there were no necessary limitations, either in space, funds, or policy, to the installation of anything approved, or anything likely to be advantageous in treating and caring for patients.

Since the work of Bloomingtondale was transferred to White Plains, there have been introduced a training school for attendants, patients' school, therapeutic baths, ample facilities for physical culture, electric, dental, ophthalmic and gynecological departments, a clinical and pathological laboratory, cabinet making, and other manual training opportunities, salt shore bathing and a large variety of individual outings, etc.

With this variety in means of treatment there has been a larger amount of individual freedom, and initiative, and a consequently greater proportion of cure and improvement, and a marked retardation of the mental enfeeblement, which, as a rule, terminates chronic insanity.

Over 1400 persons have enjoyed the benefits of the new Bloomingtondale, and fully one-third of these got well enough to live away again, while about 300 got as well as ever. During the 10 years that Bloomingtondale has been at White Plains it has done a large amount of charitable work among the wholly or partially dependent insane of the community. The generous gift of Mrs. John C. Green has given it \$75,814.19 to so dispense, where it would best relieve suffering among insane women, and Bloomingtondale itself, from its own earnings, has bestowed over \$400,000.00 additional on the worthy and preferably curable insane of both sexes. Its policy has been to aid, for a limited time, as many hopeful cases as possible, but to retain chronic and hopeless cases only to a limited extent, and through these limitations to scatter its beneficence over as wide a field as possible. Nearly 900 persons have shared its pecuniary assistance at White Plains. While far from experimenting on its patients, no known and approved method to benefit them has been neglected, and the results have been very gratifying, and the figures encouraging, when we consider the proportion

of cases, hopeless from the beginning, which such a metropolitan hospital must admit.

Bloomington has never entered into any visionary departures, or medical advertising, but has always pursued a dignified and liberal course toward its patients and the surrounding community, and it has continued to draw patients of the best class, in larger numbers year by year, thus increasing its ability to benefit those needing its aid. At the present time no other hospital is better prepared to do enlightened humane work among the insane, or for those upon the border line, and its recent and prospective additions of attractive detached villas more and more draw patients who are accustomed to have every comfort, and can in these liberally conducted retreats have almost every freedom, while also having every facility a well-equipped hospital affords.

The main buildings for patients, which are connected over-ground, afford a large variety of accommodations of a very nice and comfortable kind.

The detached villas, which are connected by subways, contain connecting rooms and adjacent baths, and all those surroundings which are so well exemplified in the modern hotel, and afford great freedom, comfort, and seclusion with the fullest hospital treatment. The facilities in these respects are gaining wider appreciation all the time, and the occupants of these villas are largely persons who have had friends at Bloomington, or who have themselves enjoyed previously these very modern adjuncts to a hospital for those suffering a moderate amount of mental fatigue, or depression. These latter often return voluntarily, or send their friends when the occasion arises.

The latest addition to these detached villas at Bloomington, the James H. Banker Memorial Villa, with its suites of rooms and adjacent baths, it is expected, will be ready for gentlemen soon after this report is issued, and will be a model building for its purpose.

—*The Long Island Home, Amityville.*—During the last six months a commodious brick boiler room with two boilers has been constructed.

—*Dr. Bond's House, Yonkers.*—A number of improvements have been made. The house has been repapered, repainted, and newly carpeted. A billiard, pool, and card room has been built; fire escapes have been put up, and fire extinguishers have been fully supplied, while a city fire-alarm box has been placed directly in front of the house. The hydrotherapeutic apparatus has been increased and the hot water supply apparatus has been considerably improved. An interior telephone system has been installed, connecting with the buildings on the place.

NORTH CAROLINA.—*State Hospital, Goldsboro.*—A new smoke stack 105 feet high has been erected. The old kitchen has been demolished and a three-story brick building, 97 feet long has been erected in its place. The first story of this has a cement floor and has been thoroughly refurnished as a kitchen and bakery. The second story will be used as an associate

dining-room; and the third story will be used as an assembly hall. There is in contemplation, the erection of a three-story building capable of accommodating 100 female patients, and of building, a spur, from the Southern railway, immediately opposite this hospital to a point near the boiler house, a distance of a little over half a mile. This will save considerable expense in hauling coal and handling building supplies.

OHIO.—*Athens State Hospital, Athens.*—From the report of this hospital for the year ending November 1, 1904, it is learned that appropriations were made for the erection of a new carpenter shop, upholster shop, paint shop, steel smoke stack, in addition to the electric light plant and for the purchase of land. All of these appropriations have been expended for the purposes specified.

—*Cleveland State Hospital, Cleveland.*—A new psychopathic hospital has been opened and is occupied by forty patients. It is found of great assistance in caring for the acute insane, permitting of a much better classification than has been possible heretofore. There are but ten patients in each ward with two day nurses and one night nurse in attendance. Each ward is arranged for special diet independent of the general kitchen so that the nurse may prepare food for those that cannot be sent to the dining-room. Hydrotherapy and electrotherapy will be used extensively. The superintendent has recommended to the board that a number of consultants be appointed including two surgeons, one each in medicine, ophthalmology, gynecology, and dentistry. The building for infirmary for which an appropriation of \$75,000 was made in 1903, will be completed by October, 1905. This will have a capacity of 200 beds and will relieve the crowded condition of the wards. \$7500 was also appropriated for a new cold storage plant and a pathological laboratory, but as the funds are only recently available, work has not yet been commenced. At the completion of the laboratory the staff will be increased by the addition of a pathologist. A number of minor improvements and repairs have been made. As the hospital is under the necessity of purchasing all its garden products, which adds considerably to the per capita cost, recommendation has been made that a suitable tract of farm-land be purchased as a means of financial benefit and also as a means of occupation for many patients.

—*Columbus State Hospital, Columbus.*—The camp for the tuberculous insane, which was in successful operation in 1903, during which time 24 patients were treated, was again successfully operated during 1904, with increased capacity, 48 women and 36 men. The mental and physical improvement has been similar to that observed during the previous year. There were six sleeping tents for women and two for men; also tents for the accommodation of the nurses; a large dining-room tent and a tent for the assistant physician; a lavatory tent and a small one for sterilizing bed linen and articles of wearing apparel; all together 96 patients were treated, 59 women and 37 men, and all of the cases excepting six, who

were in the third stage of the disease, were benefited. The camp was operated from May 2d, to November 12th, and efforts are being made to obtain sufficient funds to segregate this class of cases in winter as well as in summer. The death rate for tuberculosis was less this year than formerly. A cottage for the chronic insane, accommodating 110 patients, has been opened and in operation for several months. This is complete in its arrangement having an individual culinary department. There is being installed in the basement of Greer cottage, which is to be devoted exclusively to the treatment of curable cases, a complete hydrotherapeutic plant including an electric light cabinet. The physical culture class which has been organized among the female patients has been found to be of great benefit, giving a great deal of pleasure, as well as considerable physical benefit being derived from the exercises. The staff has been increased by the appointment of an extra interne; this being necessary on account of the increased number of patients being under treatment. A training school for nurses continues in successful operation and the results have been shown in greatly improved nursing.

—*Long View Hospital, Cincinnati.*—A number of new improvements have been made in this hospital, a new laundry building being the greatest. In this all machinery will be operated by electric motors and gas will be used to heat hand irons and all machinery requiring heat, as this is thought to be more certain and less expensive in operation than electricity. The east end of the basement of this building will be used for storing vegetables. The other improvements consist of an addition to the green house, considerable grading, the making of cement walks, and a number of other minor improvements. The officers' kitchen has been removed from the extreme eastern end of the basement to a large room under the dining-room and the old kitchen has been fitted up for the proper storage of milk, being cooled by brine from the ice tank.

—*Cincinnati Sanitarium, Cincinnati.*—The board of directors are considering plans for the erection of new buildings as the present buildings are considered inadequate. Several rooms are now being fitted up for a clinical laboratory. Contracts have been awarded for lighting the grounds and amusement hall with electricity.

OREGON.—*Oregon State Insane Asylum, Salem.*—There were remaining in this hospital, September 30, 1904, 1373 patients. The daily average population for the preceding biennial period was 1321.21. The crowding of this hospital rendered it necessary that the care and treatment of the Alaskan insane be discontinued and therefore these patients were transferred to the Portland Sanitarium. Among the improvements made, are the construction of two modern barns, one for horses and one for cows, to take the place of the old one which has become inadequate, and new hog barn 50 x 100 feet. This is connected with the basement track by an elevated car track and is located at a considerable distance from the

other buildings. Three new brick lavatories have been constructed and supply nine wards with modern bath equipment. A new park for women was built on the back lawn and affords pleasant and safe grounds for out-door exercise of those patients whose condition renders it undesirable to have on the front lawn. Fire walls have been constructed in the attic as an additional security against fire. One new enclosed cottage has been constructed at the cottage farm. It consists of two wards having accommodations for 42 patients each. An extension was also made to the congregate dining-hall 40 x 40 feet, two stories high, the upper floor being used for sleeping apartments for employees. The engine room and bakery have also been enlarged by additions.

—*Crystal Springs Sanitarium, Portland.*—A new building 40 x 140, two stories high, to accommodate 60 male patients, will shortly be completed. A part of the basement will be used as a laundry. The water supply has been increased. Considerable work has been done on the grounds, new roads being constructed, and the appearance has been considerably improved. A business manager has been appointed who relieves the medical staff of considerable business details.

PENNSYLVANIA.—*State Lunatic Hospital, Harrisburg.*—The cold storage building is finished and in use. Two tons of ice is supplied daily, the animal heat is removed from eight beef carcasses daily, and there is a storage capacity for 12 carcasses. In addition, boxes are cooled for vegetables, milk, and butter. The cellar and attic are connected by an electric elevator. The bakery and store rooms are in close proximity joined by a covered porch, and connection is made from each of these buildings to the kitchen through underground inclines and covered ways. All material is delivered to the cold storage building and store rooms and from there advanced with but one handling to the kitchen where it is prepared for subsequent distribution, thus securing great economy in handling the raw material. Two buildings have been erected for patients, one for recent and acute cases, two stories in height, which in addition to the necessary rooms, lavatories, etc., will contain operating and electrical rooms and a hydrotherapeutic apartment which is to be equipped with the latest appliances. The building is designed for 40 patients and has at each end on the first floor a porch 12 x 30 feet in size. This building is connected by underground ways at one end of the kitchen, at the other 80 feet distant is a second new building which is to be used for convalescent and periodical patients. This is built in an L-shape, has a large bay window at the exterior angle and a stairway at the interior angle. It is two stories in height and has a 12-foot corridor extending through the building. It contains 42 single, 11 two, 2 three, 1 four and 1 fourteen bedded rooms accommodating 88 occupants. A third building built for the dangerous class of patients is in the form of a quadrangle, two stories in height, with an inner court 80 x 90 feet. Rooms, 14 double and 64 single, for 92 occupants are built on the outside and open into 12-feet

corridors, which look into the court, the walls of which are built of light-yellow brick. These houses are so constructed that all parts at all times will have plenty of light. All these buildings are of fire-proof construction and have only recently been finished.

—*State Hospital for Insane, Norristown.*—A number of the new buildings which have been under construction at this hospital have been delayed by the strikes of last summer. The nurses' home for female attendants is about ready for occupancy. The pathological building and morgue are under construction. The building for the swine and poultry and for the soap factory is very elaborate and complete and gives great satisfaction.

—*Philadelphia Hospital, Insane Department, Philadelphia.*—During the past year a vertical filing system has been installed for keeping histories of patients, each patient being kept in an individual holder and being a typewritten record from stenographic notes made during a visit to the patient. The value of this has been further increased by index cards which are crossed indexed.

RHODE ISLAND.—*Butler Hospital, Providence.*—A new hydrotherapeutic bath has been installed in the basement of the Weld house which is a counterpart of that already installed in the Goddard house. Italian marble wainscoting adds to the beauty of this bath. Fire-proof stairways have been provided for the north wards of the male and female divisions. All of these improvements have necessitated considerable structural changes and advantage was taken while doing this to thoroughly overhaul the bath-rooms and lavatories on these wards. Automatic sprinklers have been placed in the laundry and in several other places where their presence was deemed necessary. A dough-mixer has been installed in the bakery. New machinery has been installed in the laundry. Other repairs such as new floors, steel ceilings, painting and refurnishing have been made.

TENNESSEE.—*Lyons View Hospital, Knoxville.*—There is now being built a wing addition to the west end of the women's block which is capable of accommodating 100 patients and it is expected that it will be completed by the 1st of June. As the hospital is on the Kirkbride plan, the arrangement can be easily imagined. The addition is of mill construction to guard against fire, there being no ceiling anywhere, the beams being finished in bright pine. There is a large sitting room at the end of each ward and a general dining-room in the basement. The cost is \$33,000.

TEXAS.—*North Texas Hospital for Insane, Terrell.*—The first class to graduate from the training school of this hospital, which was organized two years ago, will hold its closing exercises about May 10. There are 10 nurses in the graduating class; in the junior class there are 50. There has recently been built an infirmary with a capacity for 55 female patients and their necessary attendants.

—*Dr. Moody's Sanitarium, San Antonio.*—There was built and equipped in 1904, a two-story, fourteen-room building which is being occupied exclusively by men. Also a cottage for isolated cases which is situated at a distance from the other buildings. The male building is over 200 feet from the original building, which is now being occupied exclusively by the women. Dr. T. L. Moody of San Antonio, has recently been made consulting physician, and spends several hours daily at the Sanitarium.

VIRGINIA.—*Western State Hospital, Staunton.*—A number of improvements have been made during the last year; electricity has been installed for lighting purposes and it is contemplated making the electric plant of sufficient capacity to run all machinery used in the institution. A large store room has been erected and is in successful use. All of the old brick walks about the grounds are being changed to granolithic, adding greatly to the appearance of the grounds. As usual the hospital has been greatly crowded during the past year.

—*Southwestern State Hospital, Marion.*—The report of this hospital for the year ending September 30, 1904, contains in addition an historical sketch of the hospital, which is of considerable interest. Three male and three female attendants completed the two years' course in nursing and were given diplomas last July. The course is most successful and the nursing has been much improved since the organization of the training school. A number of improvements have been made, among these being the installation of an internal telephone system, the construction of a railroad switch, a new floor in the amusement hall, the construction of a new carpenter shop, a new engine in the electric room and a number of other minor improvements. There were remaining in the hospital 472 patients.

WASHINGTON.—*Eastern Washington Hospital for Insane, Medical Lake.*—The last legislature passed a law removing the defective children from the school for defective youths and placing them under the management of this hospital. An appropriation of \$50,000 was made for a building to be used for this purpose and the construction of this will be begun shortly. It is expected that it will be completed by fall when all defective children confined in other institutions will be removed to this hospital. A training school will continue the education of those who have sufficient mental ability to gain from such instruction. The building that is now occupied by defective children is to be used by the blind, deaf and dumb of the State. An appropriation of \$55,000 was also made for a new building for insane patients and the first attached cottage will be erected during this summer. Hitherto all additions have been in the form of wings. Numerous improvements in the grounds have been planned. This hospital has a short training course for nurses.

CANADA.—*Asylum for the Insane, London, Ontario.*—Within the last two years a number of changes and improvements have been made in this

institution, having in view the better care and comfort of both patients and employees.

As the water supply had hitherto been imperfect, a persistent effort was made to build a suitable reservoir which would supply pure water and and plenty of it for all time. This has been accomplished after the work had occupied three whole seasons. The work was done almost entirely by hospital labor, and at the end of last autumn there was finished one of the best reservoirs in the province. It is over 300 feet long and about 100 feet wide and 109 feet deep. It is built of cement on the bottom, cobble stones laid in cement up the sides, with a wide cement curb around the top which is surmounted by a gas pipe and wire-gauze fence. The whole making a very pretty appearance which will be improved by the laying out of the grounds with trees, etc. This winter it has furnished an abundant supply of beautiful spring-water ice, twenty inches in thickness. Besides storing all needed for hospital use, \$200 worth was sold.

The large central building of the new infirmary has been converted into a nurses' home, chiefly for those nurses who work on the worst halls of the institution. This is found to be a great improvement for about 25 nurses. A nurses' training school has been conducted for the last three years and has graduated ten nurses. The course has recently been lengthened to three years. There are now 30 students. A good deal of operative surgery, both general and gynecological is done here and the staff are impressed with the advantages in every way. The capacity of the laundry has been doubled by a new building which is furnished with the most approved machinery and laundry furniture, including a large sterilizer. The building of an isolation hospital for tuberculosis cases has been urged for the last three years, but as yet the government has not appropriated the money necessary. An addition was made last autumn to the estate, by the purchase of 235 acres of land adjoining the asylum grounds, making now in all 535 acres of good agricultural land.

Appointments, Resignations, Etc.

- ADAMS, DR. G. S., promoted to be First Assistant Physician at the South Dakota Hospital for the Insane, Yankton, South Dakota.
- APPLEBY, DR. SCOTT, formerly Third Assistant Physician at the North Texas Hospital for the Insane, Terrell, resigned to enter private practice.
- BARKER, DR. EDITH A., formerly Pathologist at the State Hospital for the Insane, Norristown, Pa., resigned.
- BELL, DR. R. W., formerly Second Assistant Physician at the Asylum for the Insane, London, Ontario, Canada, resigned.
- BEST, DR. BLANCHE, formerly Assistant Physician at the State Hospital for the Insane at Warren, Pa., resigned December 15, 1904.
- BOND, DR. HUNTER A., formerly Assistant Physician at the Manhattan State Hospital, West, Ward's Island, New York City, died November 13, 1904. "In the death of Dr. Hunter A. Bond, the hospital sustained a great loss. The doctor had been in the service of the hospital since February 1, 1897, but for some months prior to his death was in ill health. He was conscientious and painstaking in his work and highly regarded by all with whom he was associated."
- CALDWELL, DR. JOHN A., formerly Junior Physician at the Cincinnati Sanitarium, Ohio, resigned to enter private practice in Cincinnati, October, 1904.
- CAMPBELL, DR. EARL H., formerly Assistant Superintendent of the Upper Peninsula Hospital for the Insane at Newberry, Michigan, appointed Superintendent April 1, 1905.
- CHAMBERLAIN, DR. GEORGE L., formerly Medical Superintendent of the Upper Peninsula Hospital at Newberry, Michigan, resigned April 1, 1905.
- COHOON, DR. E. H., formerly Fourth Assistant Physician at Mt. Pleasant State Hospital, Iowa, promoted to be Third Assistant Physician.
- COLBY, DR. F. B., formerly Assistant Physician at the Boston Insane Hospital, Mass., resigned.
- CORT, DR. PAUL L., formerly Third Assistant Physician at the New Jersey State Hospital, Trenton, resigned to engage in general practice.
- DARNELL, DR. R. FL., formerly Assistant Physician at the Northern Indiana Hospital for the Insane, Longcliff, resigned to take a similar position at Pueblo, Colorado.
- DELACROIX, DR. ARTHUR C., formerly Assistant Physician at the Manhattan State Hospital, West, Ward's Island, New York City, resigned November 1, 1904.
- FARRAR, DR. CLARENCE B., formerly Clinical Assistant at the Sheppard and Enoch Pratt Hospital, Towson, Md., promoted to be Assistant Physician and Director of the Laboratory.
- FITZGERALD, DR. JOHN G., formerly Assistant in Dr. Meyer's Sanitarium, Toronto, appointed Medical Internes at the Buffalo State Hospital, Buffalo, N. Y., October 15, 1904.
- FOX, DR. A. J., formerly Medical Internes at the Manhattan State Hospital, East, Ward's Island, New York City, resigned October 11, 1904.
- FULBRIGHT, DR. W. M., appointed Third Assistant Physician at the North Texas Hospital for the Insane, Terrell.
- FUNKHOUSER, DR. EDGAR, formerly Fourth Assistant Physician at the New Jersey State Hospital, Trenton, promoted to be Third Assistant Physician.
- GAY, DR. C. BERTRAM, formerly Second Assistant Physician at Butler Hospital, Providence, R. I., resigned to enter private practice in Fitchburg, Mass.

- GILL, DR. MARY E., appointed Assistant Physician at the Boston Insane Hospital, Mass.
- GORRILL, DR. GEORGE W., formerly Junior Assistant Physician at the Buffalo State Hospital, Buffalo, N. Y., promoted to be Assistant Physician, November 1, 1904.
- GRIFFITH, DR. L. F., formerly Second Assistant Physician at the Oregon State Insane Asylum, Salem, promoted to be First Assistant Physician.
- HAMILTON, DR. SAMUEL W., appointed Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, March 1, 1905.
- HARP, DR. HENRY J., JR., appointed Clinical Assistant at the Manhattan State Hospital, East, Ward's Island, New York City, October 20, 1904; resigned February 24, 1905, and appointed Medical Internes at the Manhattan State Hospital, West, Ward's Island, New York City.
- HARRIS, DR. HARRY G., formerly Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York City, resigned March 8, 1905.
- HASSELLTINE, DR. H. E., appointed Medical Internes at the Manhattan State Hospital, East, Ward's Island, New York City, January 1, 1905.
- HATHAWAY, DR. GEORGE S., formerly Internes at Butler Hospital, Providence, R. I., promoted to be Second Assistant Physician.
- HAVILAND, DR. F. R., formerly Medical Internes at the Manhattan State Hospital, East, Ward's Island, New York City, promoted to be Junior Physician, November 4, 1904.
- HAWES, DR. EVERETT M., formerly Medical Internes at the Manhattan State Hospital, West, Ward's Island, New York City, promoted to be Junior Physician, November 2, 1904. Resigned January 15, 1905.
- HOGG, DR. GARRETT, formerly Assistant Superintendent at the St. Louis Insane Asylum, resigned.
- JENKINS, DR. W. E., appointed Second Assistant Physician at the State Insane Hospital, Asylum, Miss.
- JONES, DR. HENRY A., appointed Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York City, March 9, 1905.
- KARPAS, DR. MORRIS J., appointed Medical Internes at the Manhattan State Hospital, West, Ward's Island, New York City, November 1, 1904.
- LOLER, DR., appointed Assistant Physician at the St. Louis Insane Asylum.
- MAC IVOR, DR. ANGUS, formerly Internes at the Columbus State Hospital, Ohio, promoted to be Assistant Physician.
- MCGRATH, DR. PATRICK J., formerly Clinical Assistant at the Manhattan State Hospital, Central Islip, resigned December 18, 1904.
- M McNARY, DR. W. D., formerly Third Assistant Physician at the Oregon State Insane Asylum, Salem, promoted to be Second Assistant Physician.
- McNAUGHTON, DR. P., formerly Third Assistant Physician at the Asylum for the Insane, London, Ontario, Canada, promoted to be Second Assistant Physician.
- McQUEEN, DR. A. S., formerly Third Assistant Physician at Mt. Pleasant State Hospital, Iowa, resigned.
- MARSHALL, DR. A. T., formerly Assistant Physician at the Boston Insane Hospital, Mass., resigned.
- MATTHEWS, DR. ADELBERT C., appointed Medical Internes at the Utica State Hospital, Utica, N. Y., July 11, 1904.
- MERENESS, DR. HARRY E., JR., formerly Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, promoted to be Assistant Physician, January 1, 1905.
- MILLER, DR. H. B., formerly Assistant Physician at the St. Louis Insane Asylum, resigned.
- MONTGOMERY, DR. CHARLES H., appointed Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, December 1, 1904.
- MORSE, DR. ELIZABETH, appointed Assistant Physician at the Eastern Michigan Asylum, Pontiac, January, 1905.

- NEAL, DR. L. B., appointed Third Assistant Physician at the State Insane Hospital, Asylum, Miss.
- O'DAY, DR. SYLVESTER F., appointed Clinical Assistant at the Manhattan State Hospital, East, Ward's Island, New York City, October 15, 1904; resigned January 15, 1905; appointed Medical Internes at the Manhattan State Hospital, West, Ward's Island, New York City, January 17, 1905.
- OSBORN, DR. W. S., formerly Internes at the Cherokee State Hospital, Iowa, promoted to be Third Assistant Physician, January 1, 1905.
- PATON, DR. STEWART, Director of the Laboratory at the Sheppard and Enoch Pratt Hospital, Towson, Md., resigned.
- PALMER, DR. FLOYD, formerly Medical Internes at the Matteawan State Hospital, Matteawan, N. Y., resigned to enter private practice in Glens Falls, N. Y.
- PATTERSON, DR. CHRISTOPHER J., formerly Assistant Physician at the Buffalo State Hospital, Buffalo, N. Y., transferred to the Manhattan State Hospital, West, Ward's Island, New York City, October 31, 1904.
- POFF, DR. C. M., appointed Fourth Assistant Physician at the North Texas Hospital for the Insane, Terrell.
- PRITCHARD, DR. J. ALBERT, appointed Junior Assistant at Willard State Hospital at Willard, N. Y., December 1, 1904.
- RANDOLPH, DR. JAMES H., Clinical Assistant at the Sheppard and Enoch Pratt Hospital, Towson, Md., appointed to be Assistant Physician at the Florida State Hospital for the Insane, Chattahoochee.
- REYNOLDS, DR. MICHAEL T., formerly Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, resigned December 27, 1904.
- ROBNET, DR. J. H., appointed Fourth Assistant Physician at the Oregon State Insane Asylum, Salem, November 24, 1903.
- ROGERS, DR. CHAS. B., formerly Assistant Physician at the Ohio State Hospital, Massillon, appointed Junior Physician at the Cincinnati Sanitarium, Ohio, October, 1904.
- ROGERS, DR. CLARKE, formerly First Assistant Physician at the South Dakota Hospital for the Insane, Yankton, resigned March 15, 1904.
- SANDY, DR. WILLIAM C., formerly Assistant Physician at the Westport Sanitarium, Connecticut, appointed Fourth Assistant Physician at the New Jersey State Hospital, Trenton, February 1, 1901, after a competitive examination.
- SHERWOOD, DR. S. W., appointed Assistant Physician at the Westport Sanitarium, Westport, Connecticut.
- SMITH, DR. PHILIP, formerly Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, promoted to be Assistant Physician, January 1, 1905.
- SPENCER, DR. ELIZABETH, appointed Assistant Physician at the State Hospital for the Insane, Norristown, Pa.
- SPIVEY, DR. E., formerly Second Assistant Physician at the State Insane Hospital, Asylum, Miss., resigned to enter private practice.
- TAMIESIE, DR. A. N., formerly Fourth Assistant Physician at Oregon State Insane Asylum, Salem, promoted to be Third Assistant Physician.
- TERFLINGER, DR. FRED. W., formerly Internes, Indianapolis Hospital, appointed Assistant Physician at the Northern Indiana Hospital for the Insane, Long-cliff, August 1, 1903.
- THOMAS, DR. A. L., formerly Fourth Assistant Physician at the North Texas Hospital for the Insane, Terrell, resigned to enter private practice.
- THOMPSON, DR. CHARLES W., formerly Assistant Physician at the Michigan Asylum for the Insane at Kalamazoo, appointed Assistant Superintendent of the Upper Peninsula Hospital for the Insane at Newberry, Michigan, April 1, 1905.
- THORNTON, DR. MICHAEL J., formerly Assistant Physician at the Manhattan State Hospital, Central Islip, resigned February 16, 1905.
- TRAIL, DR. C. J., appointed to be Assistant Physician at the South Dakota Hospital for the Insane, Yankton, South Dakota.

- UNTERBERG, DR. H., formerly Assistant Physician at the St. Louis Insane Asylum, promoted to be Assistant Superintendent.
- WASHBURN, DR. JOHN L., formerly Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, promoted to be Assistant Physician, February 1, 1905.
- WHELPLEY, DR., appointed Assistant Physician at the St. Louis Insane Asylum.
- WHERRY, DR. JAMES W., formerly Assistant Physician at the Clarinda State Hospital, Iowa, appointed Medical Superintendent of Glenwood, a home for epileptics, Dansville, N. Y.
- WHITNEY, DR. CLARENCE E., appointed Junior Physician at the Manhattan State Hospital, Central Islip, December 15, 1904.
- WILMOTT, DR. C. BROOKS, appointed Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York City, November 4, 1904, resigned March 4, 1905.
- WILLIAMSON, DR. W. T., formerly First Assistant Physician at the Oregon State Insane Asylum, Salem, resigned to become associated with the Crystal Springs Sanitarium at Mount Tabor.
- WILSON, DR. W. T., appointed Third Assistant Physician at the Asylum for the Insane, London, Ontario, Canada.
- WOLLEY, DR. HERBERT C., appointed Medical Interne at Willard State Hospital at Willard, N. Y., October 26, 1904.

Pamphlets Received

Twenty-third Annual Report of the State Hospital for the Insane at Warren, Pennsylvania for the year ending November 30, 1904.

Ninth Annual Report of the Board of Managers of the Springfield State Hospital of the State of Maryland to His Excellency the Governor of Maryland. October 1, 1904.

A Proctological Clinic. John L. Jelks, M. D. Reprinted from Memphis Medical Monthly, February, 1905.

Reports of the Trustees and Superintendent of the Butler Hospital, Presented to the Corporation at its Sixty-first Annual Meeting, January 25, 1905, Providence, R. I.

Seventh Biennial Report of the Trustees, Superintendent and Treasurer of the Illinois Asylum for Insane Criminals at Chester. July 1, 1904.

Effect of Severe Hemorrhage on the Number of Blood Plates in Blood from the Peripheral Circulation of Rabbits. F. L. Richardson, M. D. Reprinted from the Journal of Medical Research, Vol. XIII, No. 1. (New Series, Vol. VIII, No. 1.) pp. 99-103, December 1, 1904.

Report of an Epidemic of Diphtheria in the Willard State Hospital. William L. Russell, M. D. and Thomas W. Salmon, M. D. Reprinted from the Sixteenth Annual Report, October, 1904.

Fifty-sixth Annual Report of the Board of Trustees and Superintendent of the Central Indiana Hospital for Insane for the fiscal year ending October 31, 1904.

Report of the Connecticut Hospital for the Insane for the two years ended September 30, 1904.

Eleventh Biennial Report of the Board of Trustees and Superintendent of the Oregon State Insane Asylum of the State of Oregon to the Twenty-third Legislative Assembly, 1905.

Proper Limitation of Marriage. Maurice C. Ashley, M. D. Reprinted from "The Hahnemannian Monthly," March, 1905.

Official Reports of the Trustees and Officers State Hospital for the Insane, Danville, Pa., October 1, 1902, September 30, 1904.



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